W. T. GARRATT

SAN FRANCISCO, CALIFORNIA.

CATALOGUE.

1883.

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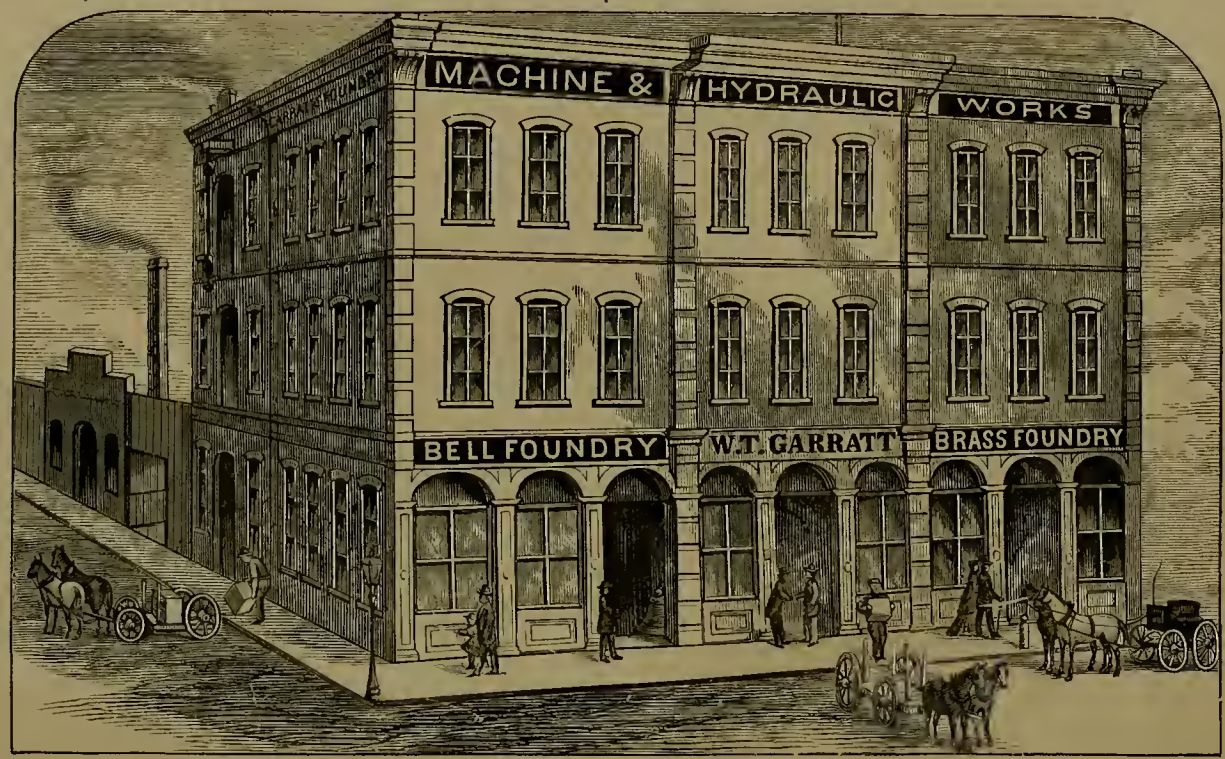

MACHINE &
HYDRAULIC
WORKS
BELL FOUNDRY
W.T. GARRATT
BRASS FOUNDRY

W. T. GARRATT'S

BRASS AND BELL FOUNDRY,

MACHINE AND HYDRAULIC WORKS.

MANUFACTURER AND IMPORTER OF

BRASS AND IRON GOODS OF EVERY VARIETY,

FOR WATER WORKS, STEAMSHIPS, RAIL ROADS, MINES,
MILLS AND PLUMBERS' WORK.

STEAM AND HAND PUMPS,

IRON PIPE AND FITTINGS.

CORNER FREMONT AND NATOMA STREETS,

SAN FRANCISCO, CAL.

1883.

Brass Castings of Every Description.

De-Oxidized Bronze.

Phosphor Bronze.

Nickel and Bismuth.

German Silver.

Copper Rods.

Brass Rod or Muntz Metal.

Copper Ingot.

Sheet Brass.

Rudder Braces, Spikes & Nails.

Pig Tin. Pig Lead.

Pig Antimony.

PREFACE.

In presenting my new Catalogue to the trade of the Pacific Coast, I have endeavored to make it the most complete Illustrated Catalogue in this line of goods used by Water Works, Mills, Miners, Manufacturers, Machinists, Steamships, Railroads, and for the Gas Fitting and Plumbing business. I have revised and corrected the many changes which have taken place during the past ten years, and illustrate all the new articles which have been introduced during that time. **My facilities for manufacturing are unequaled, either on this Coast or in the Eastern States.** Carrying a large stock enables me to fill orders promptly and at prices as low as can be given for the quality of goods. **My manufactured goods are superior in every respect** to those of Eastern manufacturers. **My highest aim** is to make all my goods of the Best Material and in the most workmanlike manner.

Special attention given to Foreign Orders.

Respectfully yours,

W. T. GARRATT.

SAN FRANCISCO, CALIFORNIA.

ENGINEERS' FINDINGS.

SCOTCH GLASS TUBES.

BABBITT METAL.

WHITE BRASS.

OLINE LUBRICATING COMPOUND.

HEMP PACKING.

RUBBER VALVES.

RUBBER PACKING.

SPELTER SOLDER.

CHURCH BELLS,

WITH GARRATT'S IMPROVED ROTARY YOKE AND TOLLING HAMMER.

Fig. 1000.

With Wheel, Iron Yoke, Standards and Frame.

WEIGHT.	PRICE PER POUND.	PRICE OF MOUNTINGS.	WEIGHT.	PRICE PER POUND.	PRICE OF MOUNTINGS.	WEIGHT.	PRICE PER POUND.	PRICE OF MOUNTINGS.
400 lbs.	.....	$32 00	900 lbs.	.....	$45 00	3000 lbs.	.....	$135 00
450 "	.....	32 00	1000 "	.....	50 00	4000 "	.....	150 00
500 "	.....	35 00	1200 "	.....	60 00	5000 "	.....	175 00
600 "	.....	40 00	1500 "	.....	75·00	.....	.....	.....
700 "	.....	40 00	2000 "	.....	100 00	.....	.....	.....
800 "	.....	45 00	2500 "	.....	120 00	.....	.....	.....

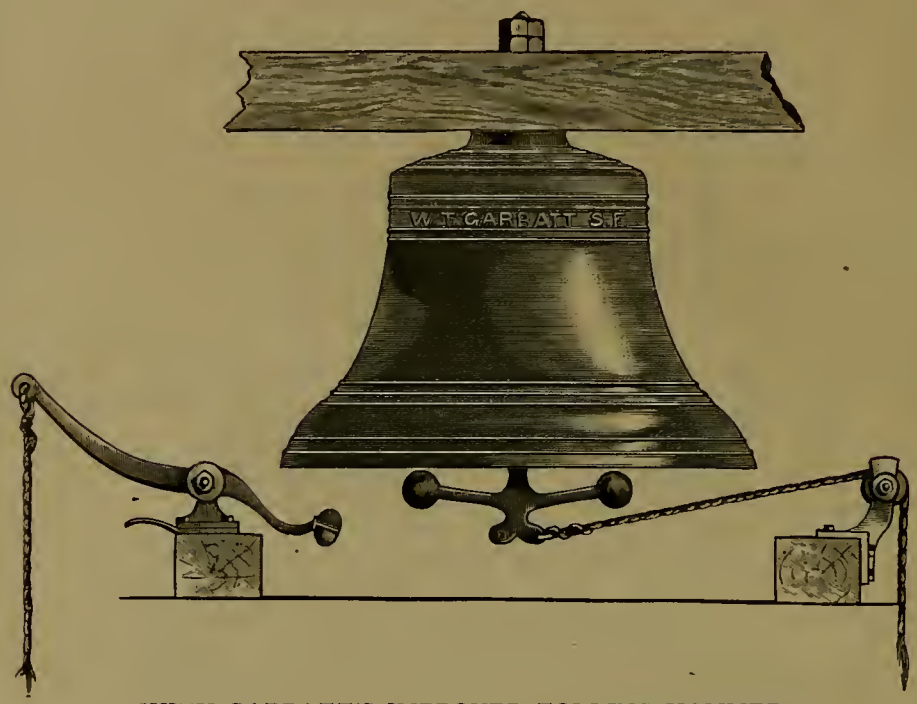
Made of best quality of metal—pure copper and block tin.

Bells of greater weight made to order.

Old Bells bought or taken in exchange.

Fire Alarm and Fog Bells.

FIGURE 1001.



WITH GARRATT'S IMPROVED TOLLING HAMMER.

Weight.	Price per Pound.	Price of Mount'gs.	Weight.	Price per Pound.	Price of Mount'gs.	Weight.	Price per Pound.	Price of Mount'gs.	Weight.	Price per Pound.	Price of Mount'gs.
250 lbs.	.....	.....	450 lbs.	.....	.....	650 lbs.	.....	....	850 lbs	.....	.....
275 "	....	.....	475 "	.....	...	675 "	....	.....	900 "	....	.....
300 "	....	....	500 "	.....	....	700 "	...	.....	950 "	...	.....
325 "	...	.....	525 "	....	...	725 "	...	.....	1000 "	....	.....
350 "	.....	...	550 "	.....	....	750 "	....	.....	1200 "	.....	.....
375 "	....	.....	575 "	.....	....	775 "	....	.....	1500 "	.....	.....
400 "	.	.....	600 "	.....	....	800 "	.....	...	2000 "	.....	.....
425 "	.....	.....	625 "	....	.....	825 "	.....	.....	3000 "	....	.....

School House, Factory, Plantation and Depot Bells.

Fig. 1002.

Suitable also for small churches.

WEIGHT.	PRICE PER POUND.	PRICE OF MOUNTINGS.	WEIGHT.	PRICE PER POUND.	PRICE OF MOUNTINGS.	WEIGHT.	PRICE PER POUND.	PRICE OF MOUNTINGS
100	.....	$15 00	175	.....	$20 00	250	.....	$25 00
125	.....	17 50	200	.....	22 50	300	.....	25 00
150	.....	17 50	225	.....	22 50	350	.....	28 00

Ship Bells.

Fig. 1003.

Turned and finished with engraved inscription as ordered.

All Sizes.

Small Ship Bells.

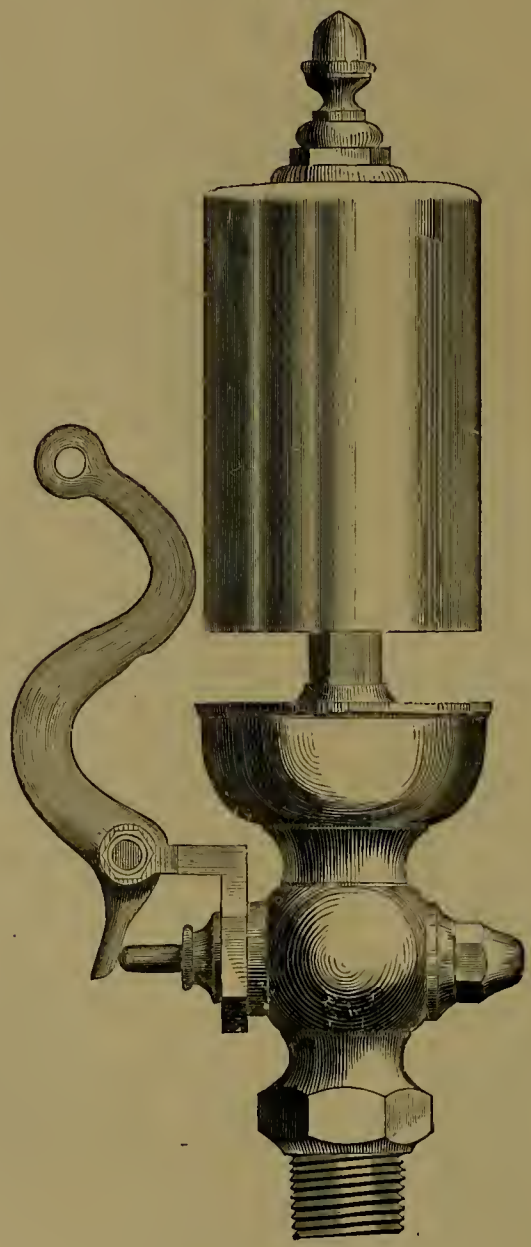
Fig. 1004.

With brass stands.

All Sizes.

STEAM WHISTLE.

Fig. 1005.

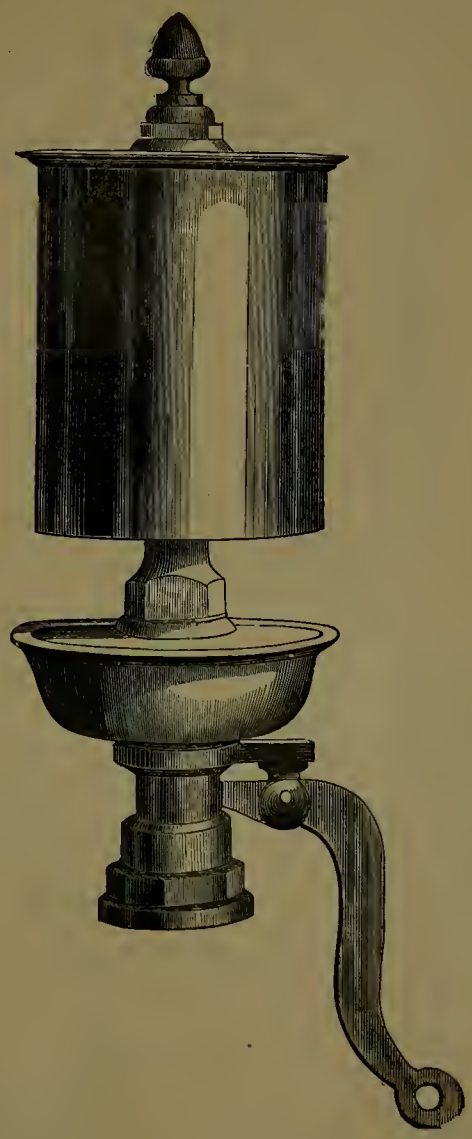


DIAMETER OF BELL.

$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	8	10	12 Inch.
For $\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	2	2	2	$2\frac{1}{2}$	3	3 Inch Iron Pipe.

STEAM WHISTLE.

Fig. 1006.



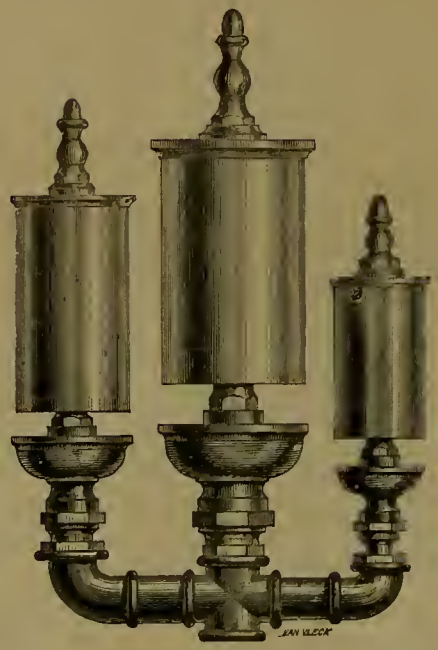
DIAMETER OF BELL.

$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	8	10	12 Inch
For $\frac{1}{2}$	$\frac{3}{4}$	1	1	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	3 Inch Iron Pipe.

STEAM WHISTLES.

WHISTLE CHIMES.

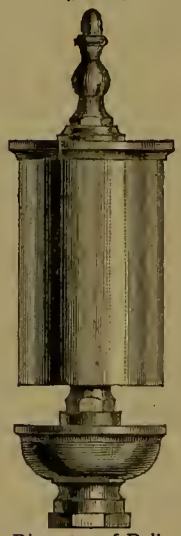
Fig. 1007.



Any number and sizes combined to order.

WITHOUT VALVE, BRASS.

Fig. 1008.



Diameter of Bell.

Size,	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12 In.
For	½	½	¾	1	1¼	1½	1½	2	2	2	2½	3	3 In. Iron Pipe.

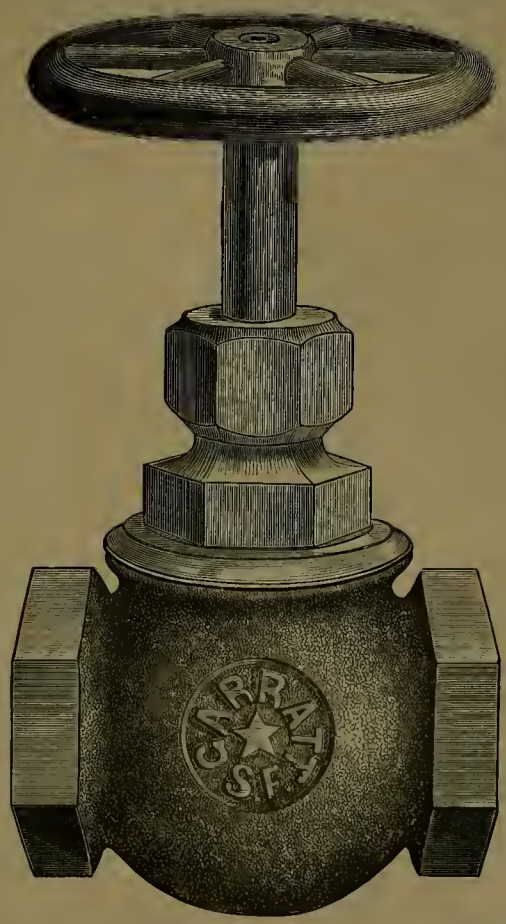
WHISTLE VALVE.

Fig. 1009.

Size..... 1 1¼ 1½ 2 2½ 3 Inches.

Globe Valve.

Fig. 1010.

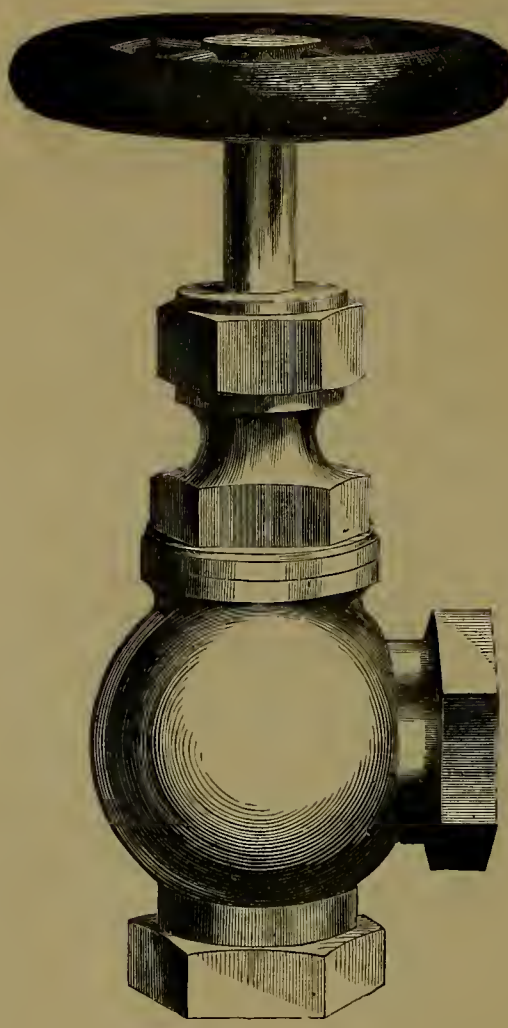


Steam Metal, Extra.

Size	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4 Inches.

GLOBE ANGLE, VALVE EXTRA.

Fig. 1011.



Steam Metal.

Size.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3 Inches.

GLOBE VALVE.

Steam Metal.

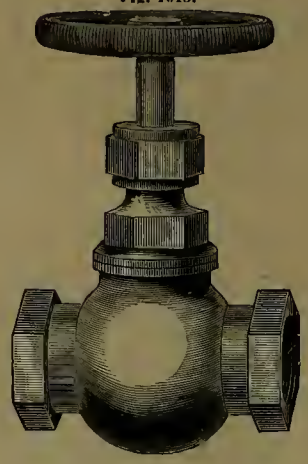
Fig. 1012.

Size $\frac{1}{8}$ $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 Inches.

GLOBE VALVE.

Finished Steam Metal.

Fig. 1013.



Size $\frac{1}{8}$ $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 Inches.

CROSS VALVE.

Composition Shell.

Fig. 1014.

Size..... $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

HOSE VALVE.

Composition Shell.

Fig. 1015.

Size..... 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Radiator Valves.

Rough and Finished Bodies.

T Handle, Plated.

Fig. 1016.

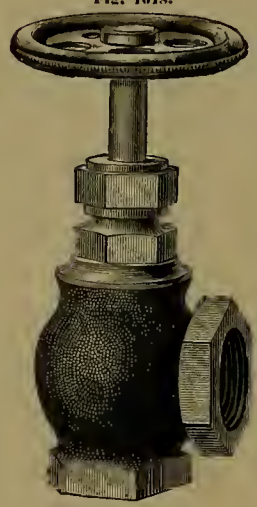
Wood Wheel Handle.

Fig. 1017.

Size..... ¼ ⅜ ½ ¾ 1 1¼ 1½ 2 Inches.

Brass Wheel Handle.

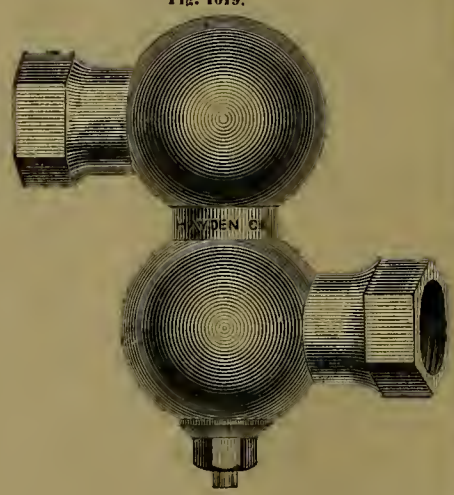
Fig. 1018.



Size.... ¼ ⅜ ½ ¾ 1 1¼ 1½ 2 Inches.

Swing Joint for Steam Pipe.

Fig. 1019.



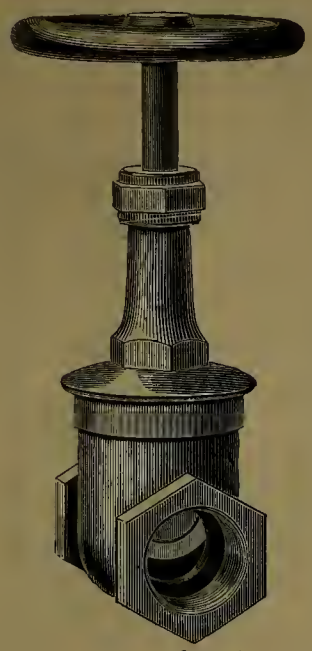
Size..... ⅜ ½ ¾ 1 1¼ 1½ 2 Inches.

COFFIN'S PATENT GATE VALVES.

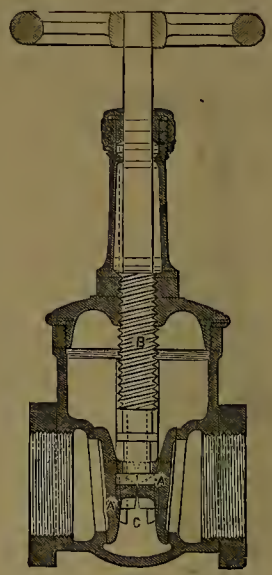
STEAM METAL.

Screw Ends.

Fig. 1020.



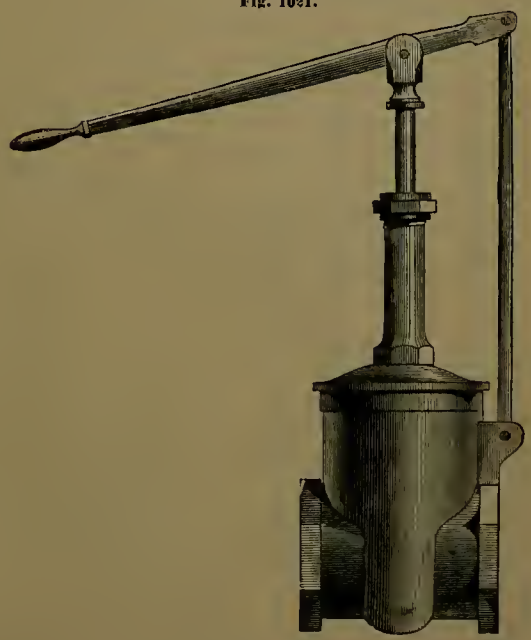
Inside View.



Size	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4 Inches.

Lever Handle, Quick Opening.

Fig. 1021.



Size	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4 Inches.

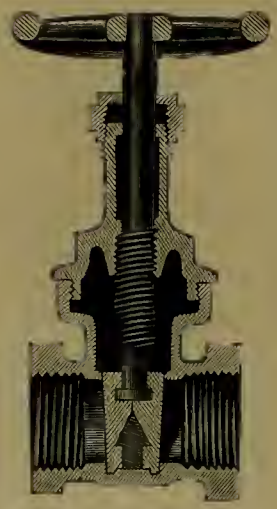
Peet Patent Gate Valve.

STEAM METAL.

Screw Ends.

Fig. 1022.

Inside View.

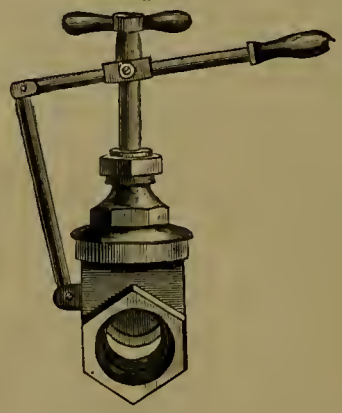


Size..... $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Quick Opening Peet Valve.

With T Handle or Lever Handle.

Fig. 1023.



Size..... 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Garratt Straight Way Valve.

Steam Metal.

Fig. 1024.

Size										
	½	¾	1	1¼	1½	2	2½	3	3½	4 Inches.

Globe Valve.

With Flanges.

Steam Metal

Fig. 1025.

Size							
	1	1¼	1½	2	2½	3	3½ 4 Inches.

Cross Valve.

With Flanges.

Steam Metal.

Fig. 1026.

Size							
	1	1¼	1½	2	2½	3	3½ 4 Inches.

Combined Check & Blow Off Valve.

Steam Metal.

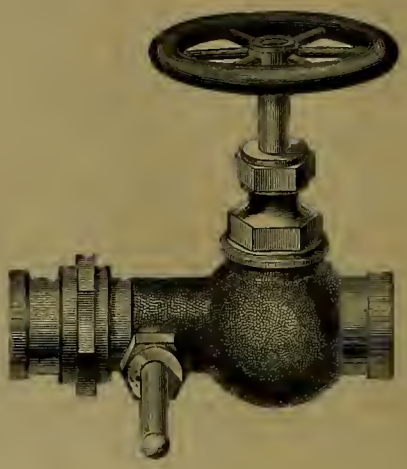
Fig. 1027.

Size .... 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ Inches.

Governor and Stop Valve.

Steam Metal.

Fig. 1028.



Size ..... 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Balance Valve.

Steam Metal.

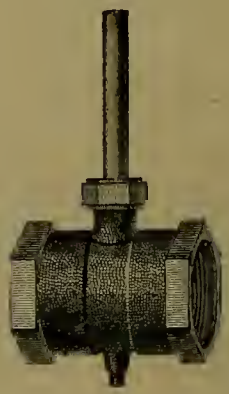
Fig. 1029.

Size..... 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Butterfly Valve.

Steam Metal.

Fig. 1030.

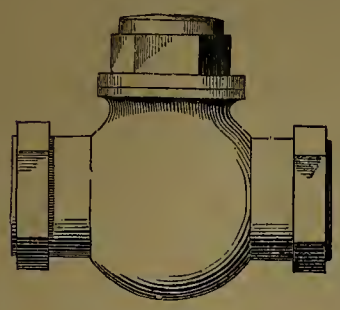


Size . $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 Inches

Horizontal Check Valve.

Steam Metal.

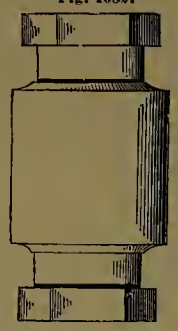
Fig. 1031.



Perpendicular Check Valve.

Steam Metal.

Fig. 1032.

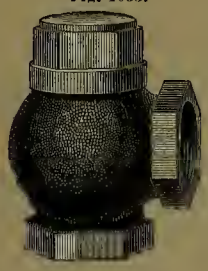


Size .... ¼ ⅜ ½ ¾ 1 1¼ 1½ 2 2½ 3 3½ 4 Inches.

Angle Check Valve.

Steam Metal.

Fig. 1033.



Perpendicular Check Valve.

Steam Metal.

Fig. 1034

Size..... ..... ¼ ⅜ ½ ¾ 1 1¼ 1½ 2 2½ 3 3½ 4 Inches.

Perpendicular Check Valve.

With Flanges.

Steam Metal.

Fig. 1035.

Horizontal Check Valve.

With Flanges.

Steam Metal.

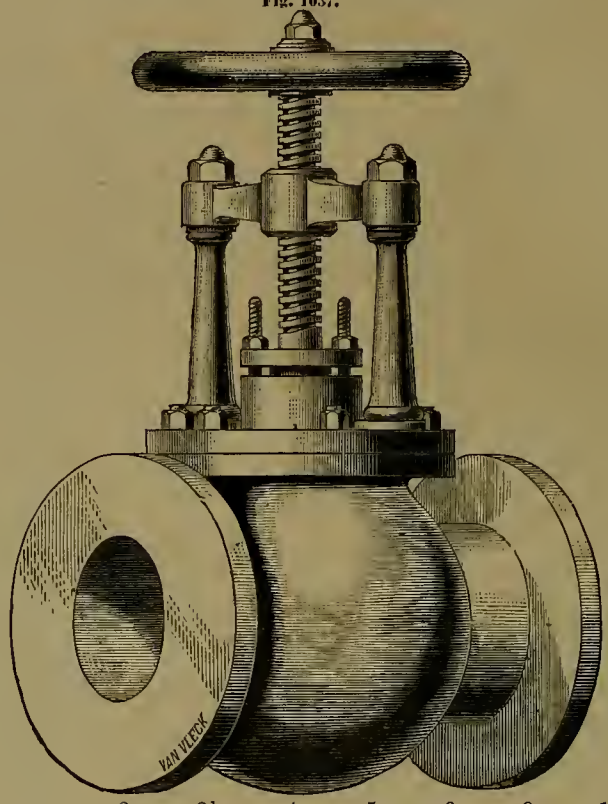
Fig. 1036.

Size .... 1¼ 1½ 2 2½ 3 3½ 4 Inches.

GLOBE VALVE EXTRA.

Iron Body, with Yoke. Flanged Ends.

Fig. 1037.



Size	3	3½	4	5	6	8	10	12 Inches.

GLOBE VALVE.

With Yoke, Iron Body, Brass Mounted, Flanged Ends.

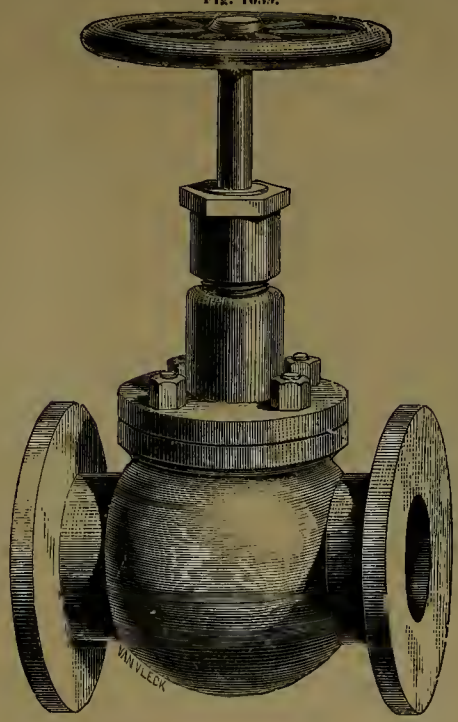
Fig. 1038.

Size	2	2½	3	3½	4	5	6	8 Inches.

Globe Valve.

Iron Body, Brass Mounted, Flanged Ends.

Fig. 1039.



Size	3	3½	4	5	6	8	10	12 Inches.

Angle Valve.

With Yoke, Iron Body, Brass Mounted, Flanged.

Fig. 1040.

Size . . .	2½	3	3½	4	5	6	8 Inches.

Globe Valve.

Iron Body. Brass Mounted.

Fig. 1041.

Cross Valve.

Iron Body. Brass Mounted.

Fig. 1042.

Size . . . 1 1¼ 1½ 2 2½ 3 3½ 4 5 6 Inches.

Angle Valve.

Iron Body. Brass Mounted.

Fig. 1043.

Size 1 1¼ 1½ 2 2½ 3. 3½ . 4 5 6 Inches.

Angle Valve.

Iron Body. Brass Mounted, with Yoke

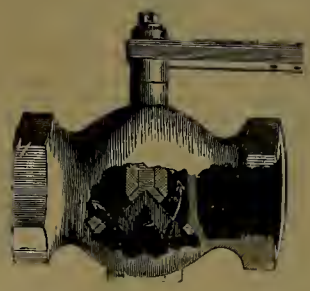
Fig. 1044.

Size.. 2 2½ 3 3½ 4 5 6 Inches.

Chronometer Governor Valve.

Iron Body.

Fig. 1045.



Size	1	1¼	1½	2	2½	3 Inches.

Back Pressure Valve.

Iron Body, Flanged Ends.

Fig. 1046.

Size	2	2½	3	4	5	6 Inches.

Disc, or Quick Motion Valve.

Iron Body, Brass Mounted.

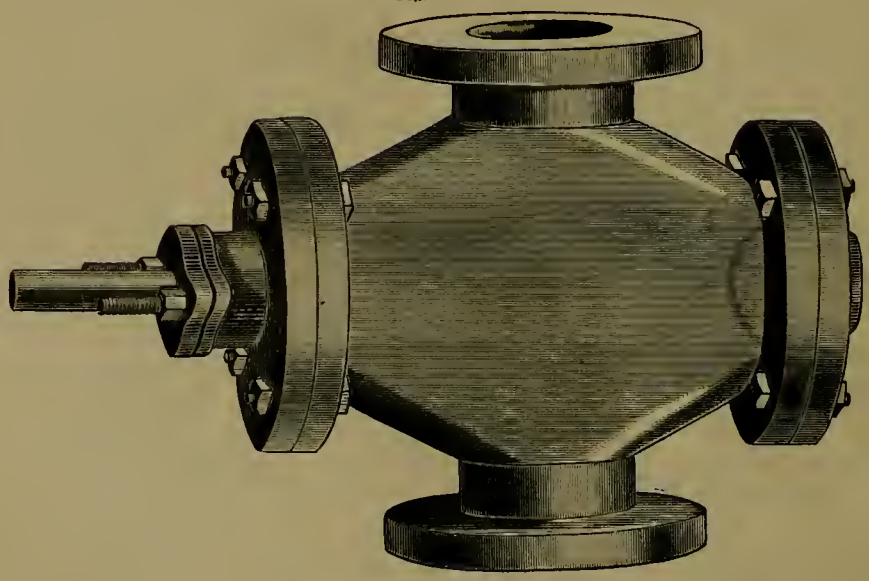
Fig. 1047.

Size..... 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 5 Inch Iron Pipe.

Corliss Valve.

Flanged Ends.

Fig. 1048.

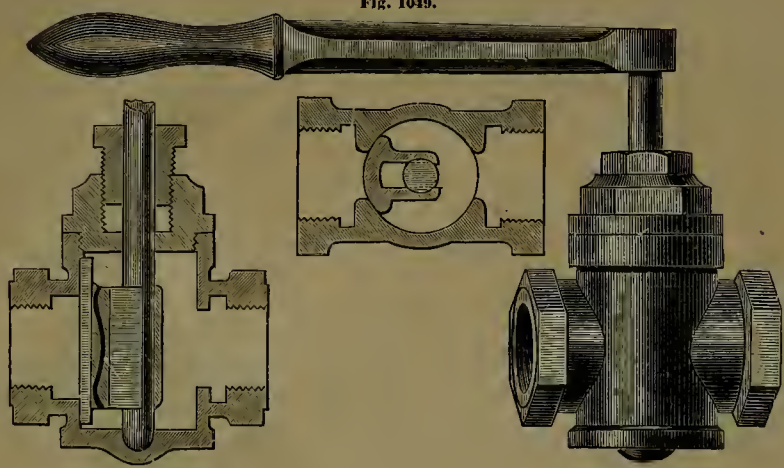


Size..... 3 4 5 6 7 8 9 10 Inches.

THROTTLE VALVES.

Steam Metal and Iron Body, Brass Mounted.

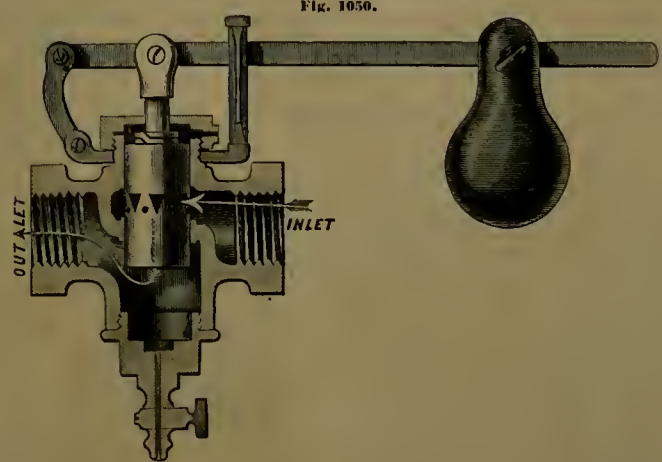
Fig. 1049.



Steam Metal. Size.....	1	1¼	1½	2	2½ Inches.
Iron Body, Brass Mounted. Size.....			1½	2	2½ Inches.

PRESSURE REGULATOR.

Fig. 1050.



Brass Bodies. Size.	1	1¼	1½	2 Inches.
Iron Body, screwed. Size.....			2	2½ Inches.
Iron Body, flanged. Size.....		3	4	6 Inches.

Angle Valve.

With Flanges.

Steam Metal.

Fig. 1051.

Size... 1¼ 1½ 2 2½ 3 3½ 4 Inches.

Hose Valve.

With Flanges.

Composition Metal.

Fig. 1052.

Size.. ..... 2 2½ 3 3½ Inches.

Safety Valve.

With Flanges.

Steam Metal.

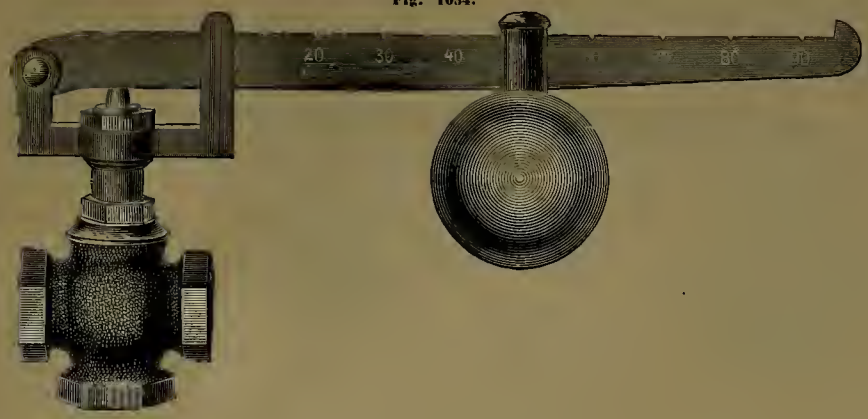
Fig. 1053.

Size..... 2 2½ 3 3½ 4 5 6 8 Inches.

Safety Valve.

STEAM METAL.

Fig. 1054.

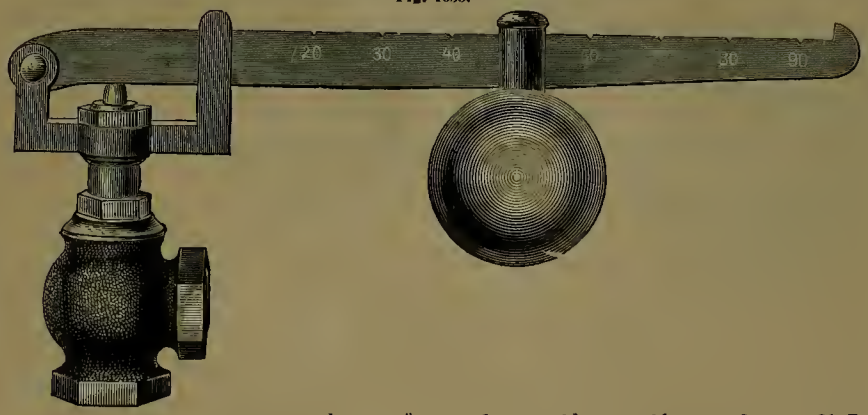


Size	½	¾	1	1¼	1½	2	2½ Inches.

Safety Valve.

ANGLE PATTERN. STEAM METAL.

Fig. 1055.



Size	½	¾	1	1¼	1½	2	2½ Inches.

Fusible Plug.

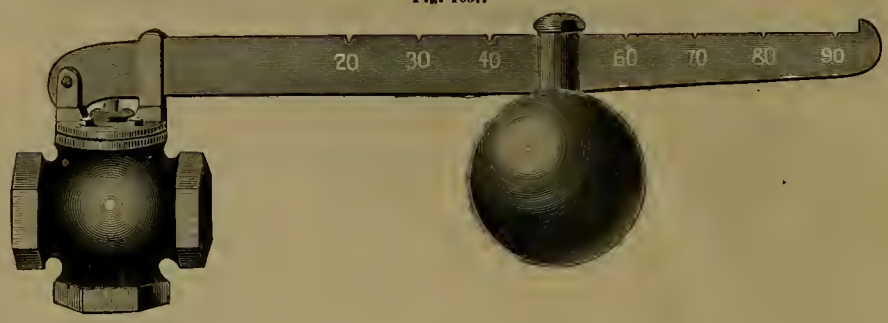
Fig. 1056.

Cut for ¾ Inch Iron Pipe.

Safety Valves.

Iron Body, Screwed.

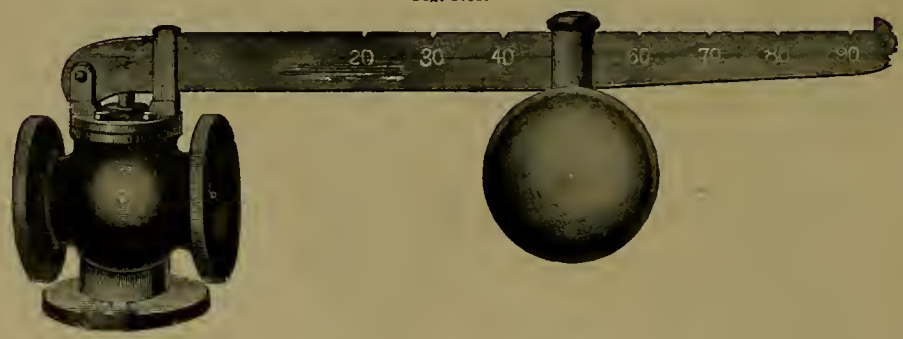
Fig. 1057.



Size..... ..... 2½ 3 3½ 4 5 6 Inches.

Iron Body, Flanged.

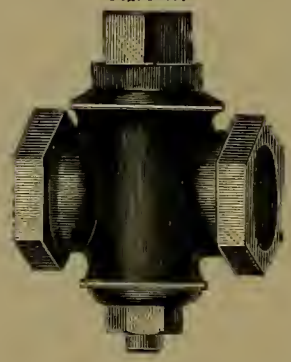
Fig. 1058.



Size..... 2½ 3 3½ 4 5 6 7 8 Inches.

Iron Cock.

Fig. 1059.



Size.. ⅜ ½ ¾ 1 1¼ 1½ 2 2½ 3 3½ 4 Inches.

Check Valves.

Iron Body.

Fig. 1060.

Size..... 1¼ 1½ 2 2½ 3 Inches.

Expansion Joint.

Steam Metal.

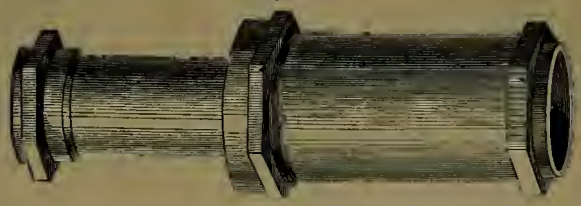
Fig. 1061.

Size	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$ Inches.

Expansion Joint.

Iron Body. Brass Sleeve.

Fig. 1062.

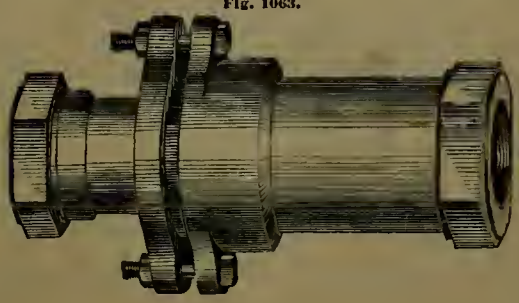


Size	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4 Inches

Expansion Joint.

Iron Body. Screwed or Flanged Ends.

Fig. 1063.

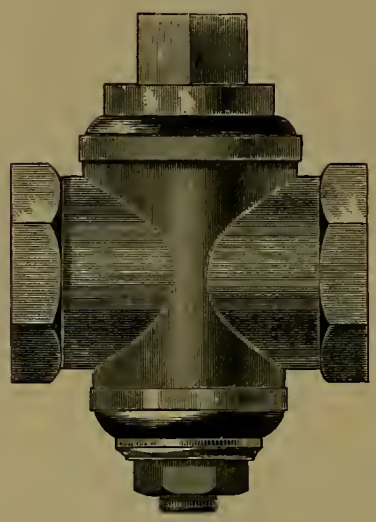


Size	3	$3\frac{1}{2}$	4	5	6	8 Inches.

Steam Cocks.

Square Head.

Fig. 1064.



Flat Head.

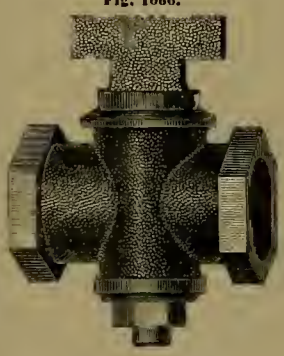
Fig. 1065.

Size..... ¼ ⅜ ½ ¾ 1 1¼ 1½ 2 2½ 3 3½ 4 Inches.

Service Cocks.

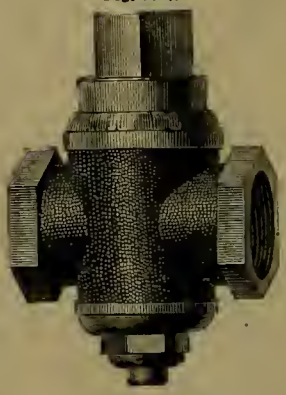
T Handle.

Fig. 1066.



Square Head.

Fig. 1067.



Flat Head.

Fig. 1068.

Size..... ¼ ⅜ ½ ¾ 1 1¼ 1½ 2 2½ 3 3½ 4 Inches.

Three Way Cocks.

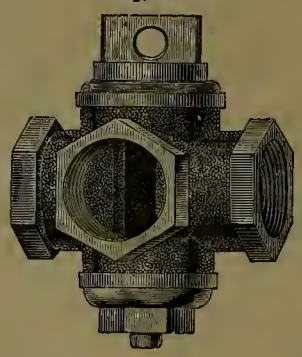
STEAM METAL.

Square Head.

Fig. 1069.

Flat Head.

Fig. 1070.



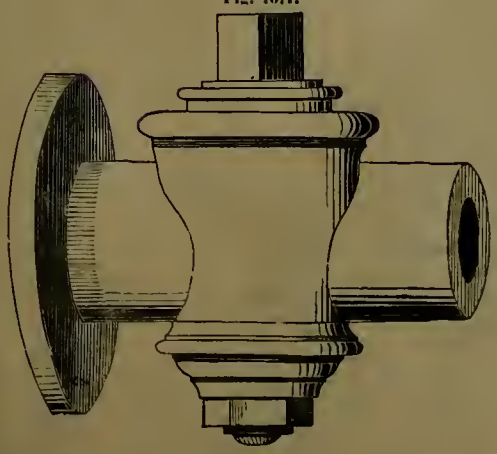
Size..... $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Steam Cocks.

STEAM METAL.

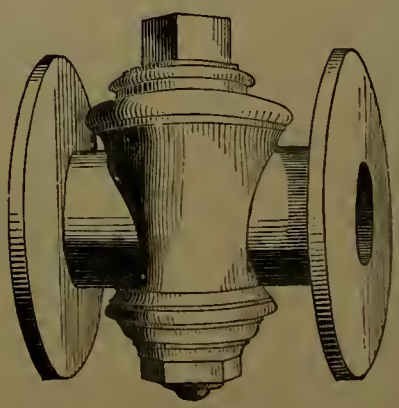
Single Flange.

Fig. 1071.



Double Flange.

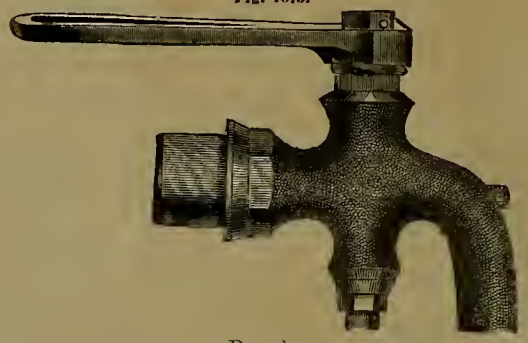
Fig. 1072.



Size .. .. $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 Inches.

STEAM BIBBS.

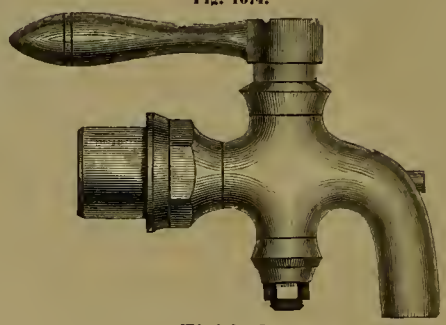
Fig. 1073.



Rough.

Diameter of Opening.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	Inches.
Diameter of Blank Shanks...	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	2	$2\frac{3}{8}$	$2\frac{7}{8}$	$3\frac{7}{8}$	Inches.

Fig. 1074.

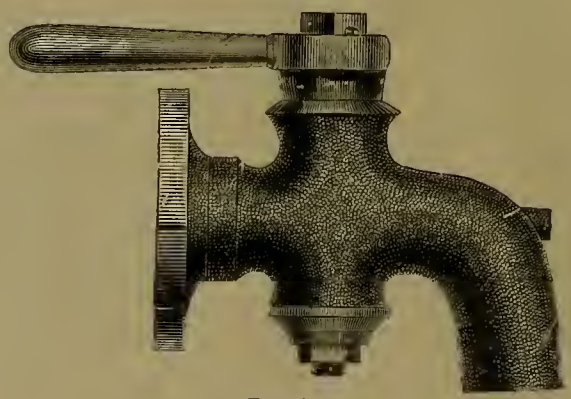


Finished.

Diameter of Opening.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	Inches.
Diameter of Blank Shanks...	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	2	2	$2\frac{7}{8}$	$3\frac{7}{8}$	Inches.

With Flange.

Fig. 1075.



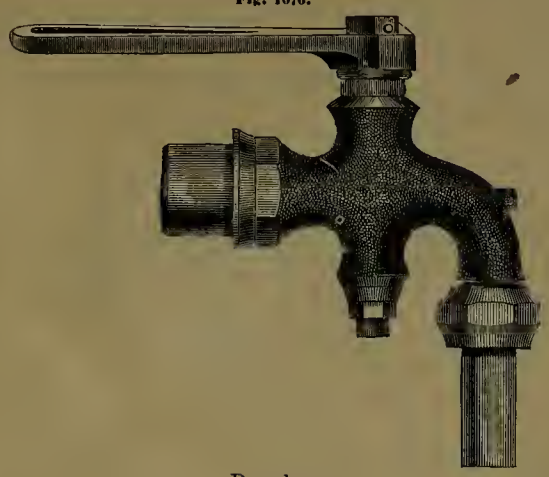
Rough.

Size.....	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4 Inches.

STEAM BIBBS.

Coupling on Nose.

Fig. 1076.



Rough.

Diameter of Opening.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	Inches.
Diameter of Blank Shanks.....	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	2	$2\frac{3}{8}$	Inches.

Coupling on Nose.

Fig. 1077.

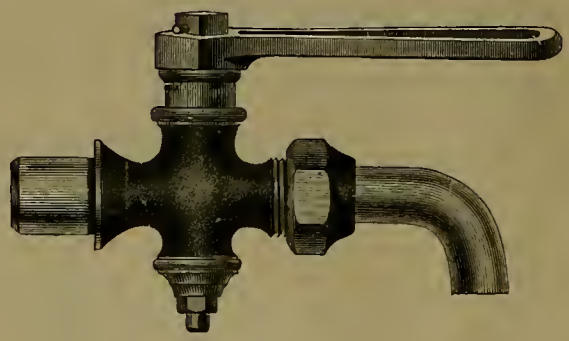
Finished.

Diameter of Opening.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	Inches.
Diameter of Blank Shanks.....	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	2	$2\frac{3}{8}$	Inches.

Cylinder Cock.

Bent Coupling.

Fig. 1078.



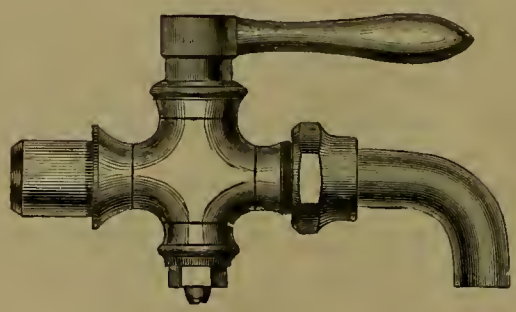
Rough.

Diameter of Opening.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2 Inches.
Diameter of Blank Shanks. ...	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	2	2	2 Inches.

Cylinder Cock.

Bent Coupling.

Fig. 1079.



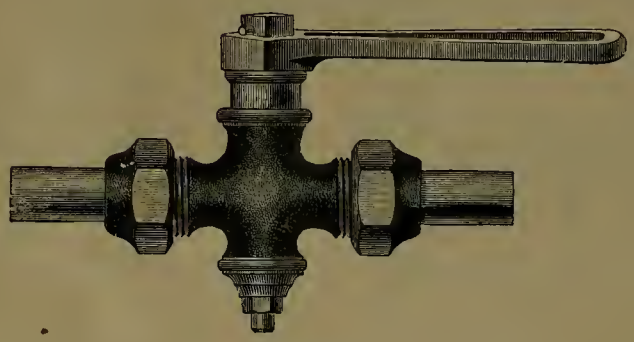
Finished.

Diameter of Opening.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2 Inches.
Diameter of Blank Shanks.....	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	2	2	2 Inches.

Cylinder Cock.

Double Coupling.

Fig. 1080.



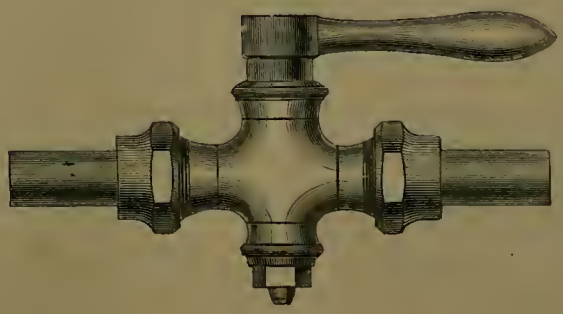
Rough.

Diameter of Opening..... ...	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2 Inches.

Cylinder Cock.

Double Coupling.

Fig. 1081.



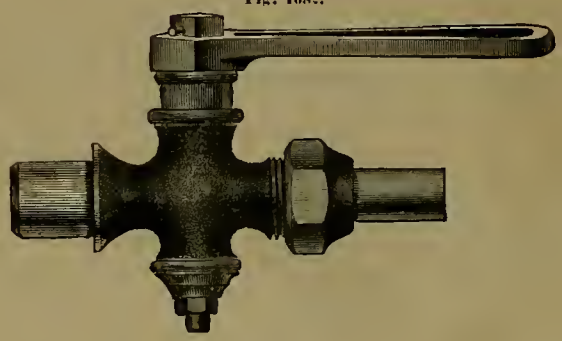
Finished.

Diameter of Opening	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2 Inches.

Cylinder Cock.

Single Coupling.

Fig. 1082.



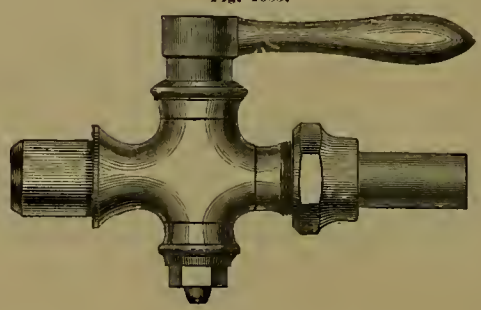
Rough.

Diameter of Opsning.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2 Inches.
Diameter of Blank Shanks..	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	2	2 Inches.

Cylinder Cock.

Single Coupling.

Fig. 1083.

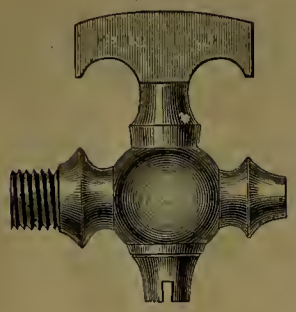


Finished.

Diameter of Opening.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2 Inches.
Diameter of Blank Shanks...	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	2	2 Inches.

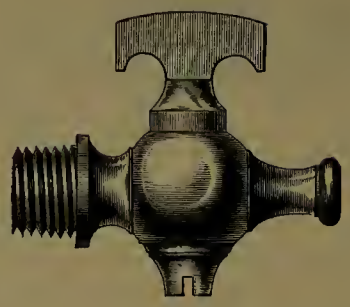
Air Cocks.

Fig. 1084.



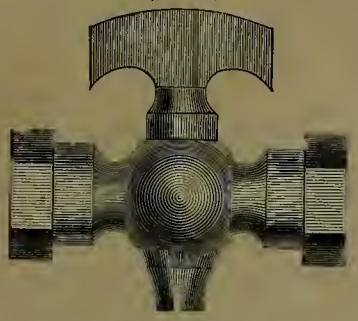
Screwed for $\frac{1}{8}$ and $\frac{1}{4}$ Inch Iron Pipe.

Fig. 1085.



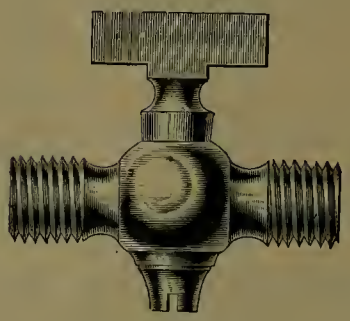
Screwed for $\frac{1}{8}$ and $\frac{1}{4}$ Inch Iron Pipe.

Fig. 1086.



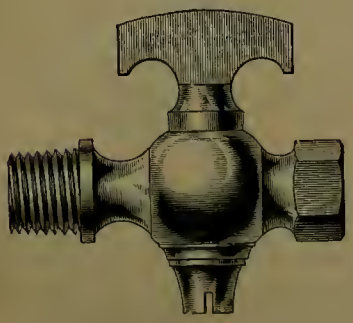
Screwed for $\frac{1}{8}$ and $\frac{1}{4}$ Inch Iron Pipe.

Fig. 1087.



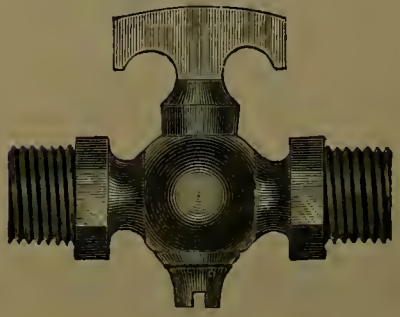
Screwed for $\frac{3}{8}$ Inch Iron Pipe.

Fig. 1088.



Screwed for $\frac{1}{8}$ and $\frac{1}{4}$ Inch Iron Pipe.

Fig. 1089.



Screwed for $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{3}{8}$ Inch Iron Pipe.

Air Cocks.

Fig. 1090.

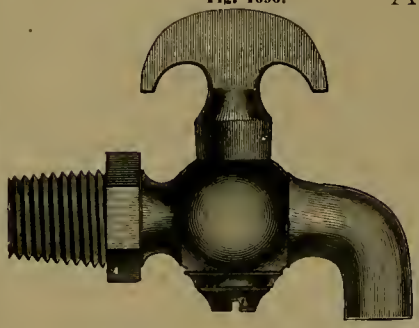


Fig. 1091.

Screwed for $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{3}{8}$ Inch Iron Pipe.

Fig. 1093.

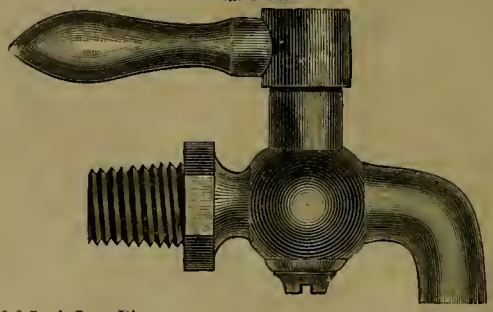


Fig. 1092.

Screwed for $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{3}{8}$ Inch Iron Pipe.

Fig. 1094.

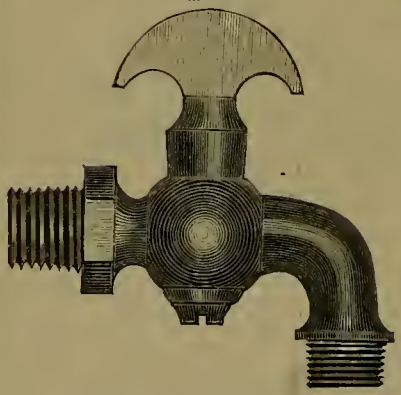
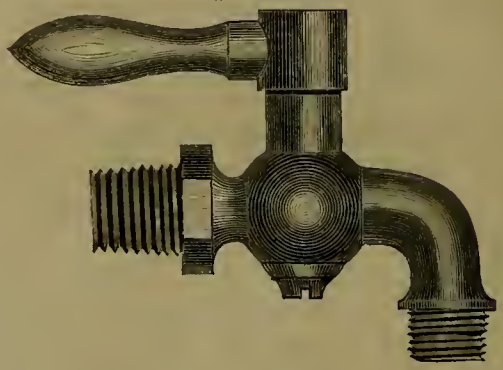
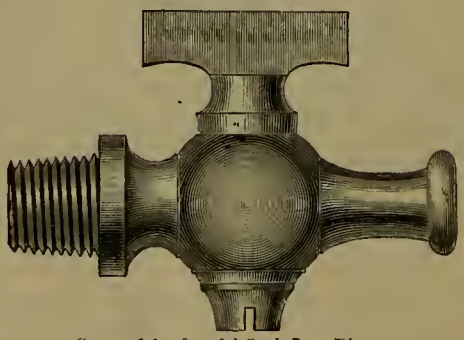


Fig. 1094 1-2.



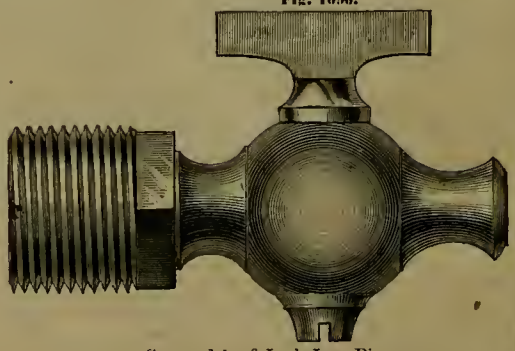
Screwed for $\frac{1}{4}$ and $\frac{3}{8}$ Inch Iron Pipe.

Fig. 1095.



Screwed for $\frac{3}{8}$ and $\frac{1}{2}$ Inch Iron Pipe.

Fig. 1096.

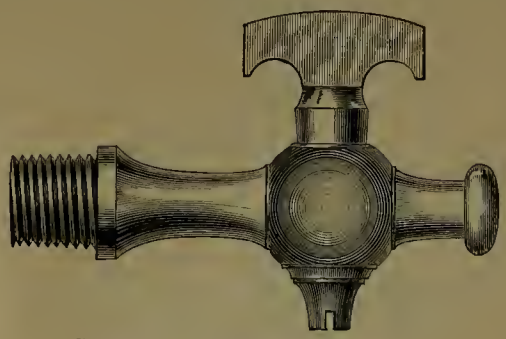


Screwed for $\frac{3}{4}$ Inch Iron Pipe.

Air Cocks.

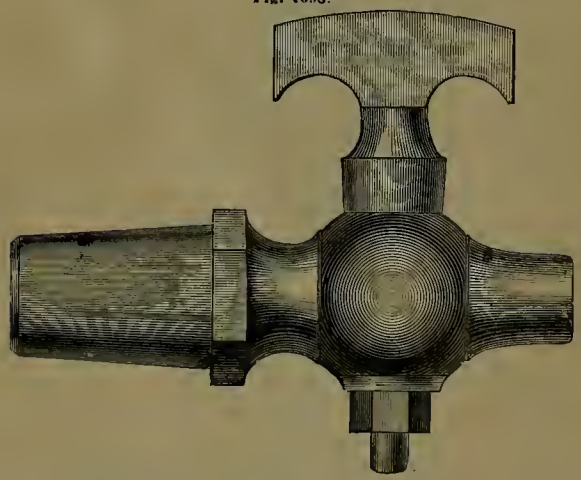
Full Size.

Fig. 1097.



Screwed for $\frac{1}{8}$ and $\frac{1}{4}$ Inch Iron Pipe.

Fig. 1098.

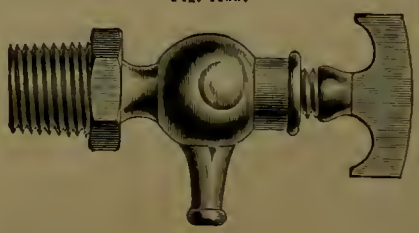


$\frac{3}{4}$ Inch Blank Shank, cut to $\frac{1}{2}$ Inch Iron Pipe.

Compression Air Valves.

Fig. 1099.

Fig. 1100.

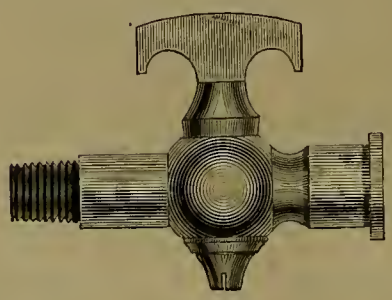


Screwed for $\frac{1}{8}$ and $\frac{1}{4}$ Inch Iron Pipe.

Cock for Steam Gauge.

SMALL.

Fig. 1101.



Finished.

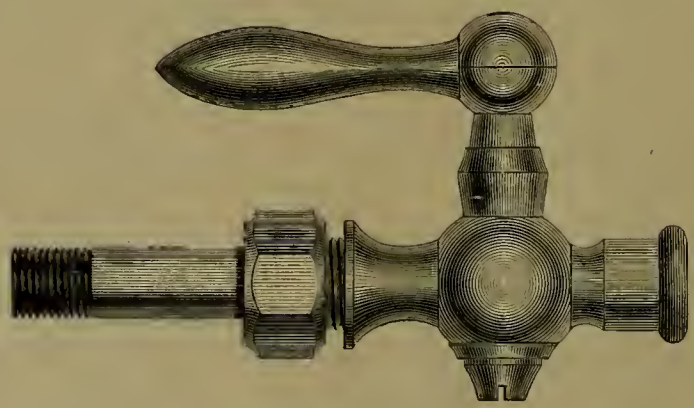
Screwed for $\frac{1}{4}$ inch Iron Pipe.

Cock for Steam Gauge.

LARGE.

Ground Joint.

Fig. 1102.

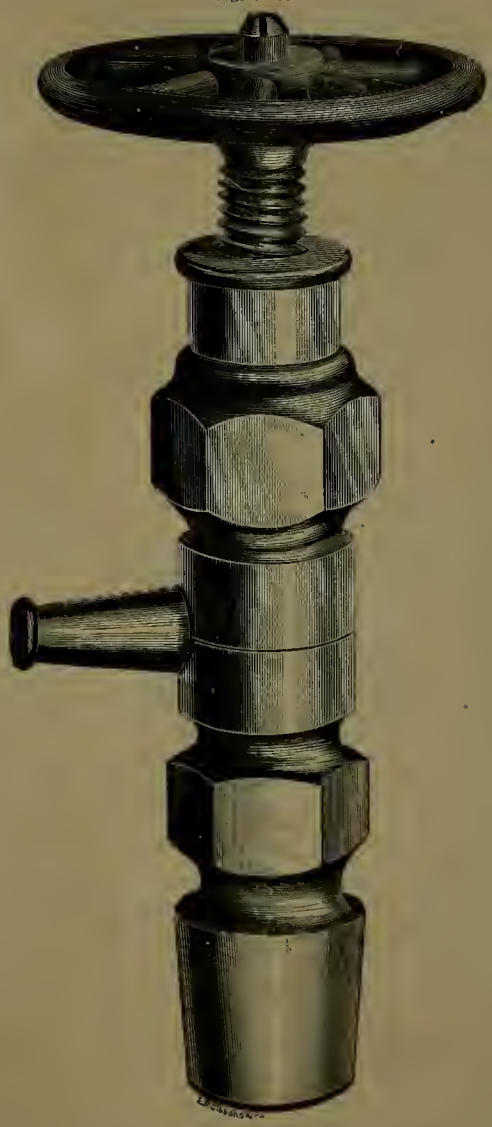


Screwed for $\frac{1}{4}$ inch Iron Pipe.

Sacramento Gauge Cock.

Iron Wheel.

Fig. 1103.



Blank Shank, $1\frac{1}{8}$ Inch Diameter.

Locomotive Gauge Cock.

Wood Handle.

Fig. 1104.

Size.....½ and ¾ Inch Iron Pipe.
Size.....1 Inch Blank.

Compression Gauge Cocks.

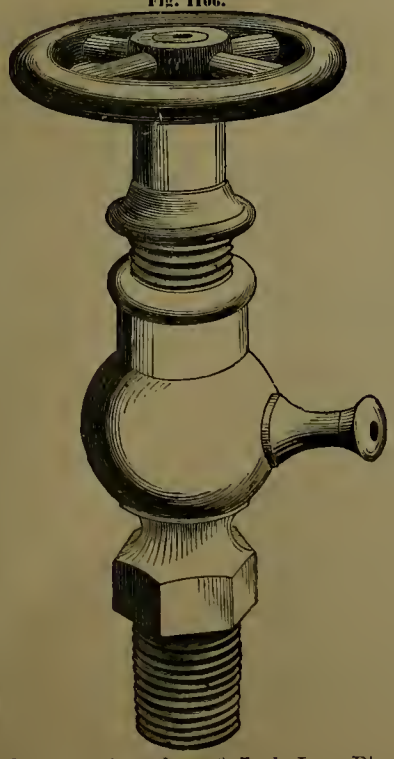
Wood Handle.

Fig. 1105.

Size, ½, ¾ Inch Iron Pipe.

Iron Wheel.

Fig. 1106.



Size... ⅜ ½ ¾ Inch Iron Pipe.

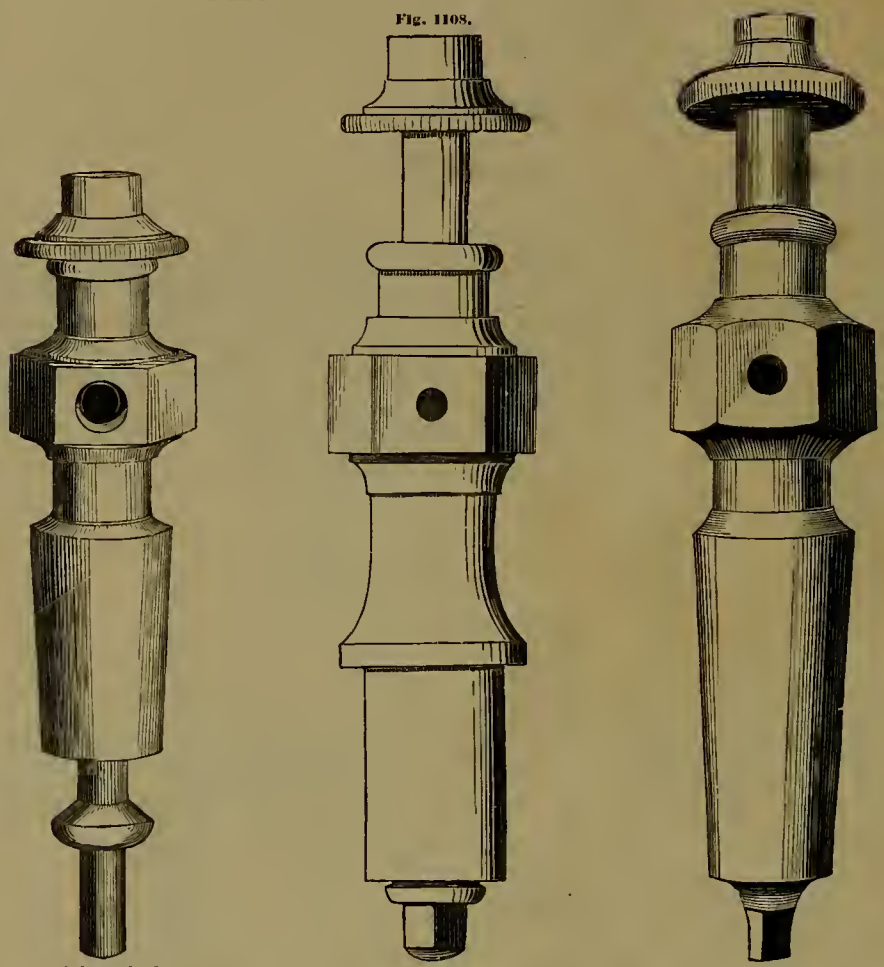
Wood Wheel.

Fig. 1107.

Blank Shank, ¾ Inch.

Mississippi Gauge Cocks.

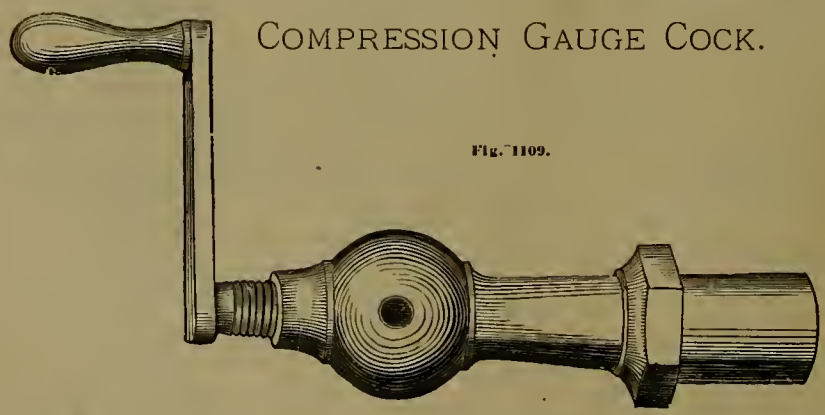
Fig. 1108.



Diameter of Blank Shanks..... ..... $\frac{3}{4}$ $\frac{7}{8}$ 1 $1\frac{1}{8}$ $1\frac{1}{4}$ Inches.

Compression Gauge Cock.

Fig. 1109.



Diameter of Blank Shank..... .....$\frac{3}{4}$ Inch.

COMPRESSION GAUGE COCKS.

Fig. 1111.

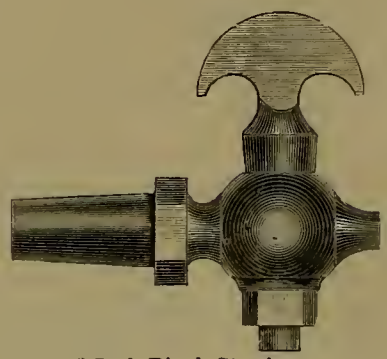
Diameter of Blank Shank, $1\frac{1}{8}$ Inch.

Fig. 1010.

Diameter of Blank Shank, $\frac{7}{8}$ Inch.

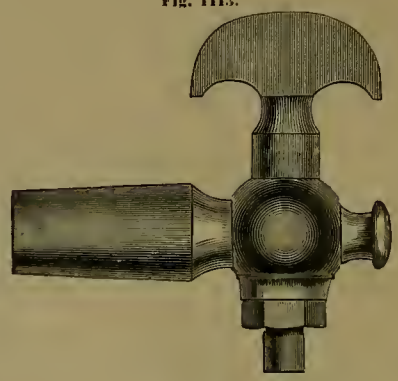
GAUGE, OR CYLINDER COCKS.

Fig. 1112.



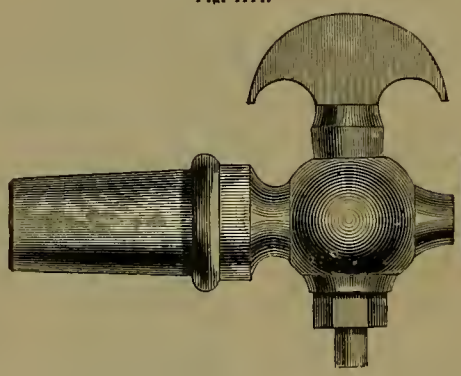
$\frac{3}{8}$ Inch Blank Shank

Fig. 1113.



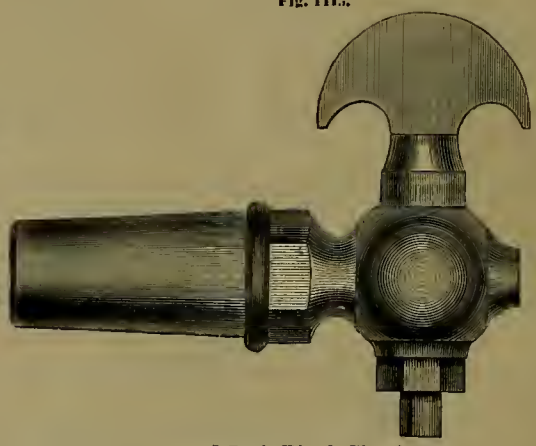
$\frac{1}{2}$ Inch Blank Shank.

Fig. 1114.



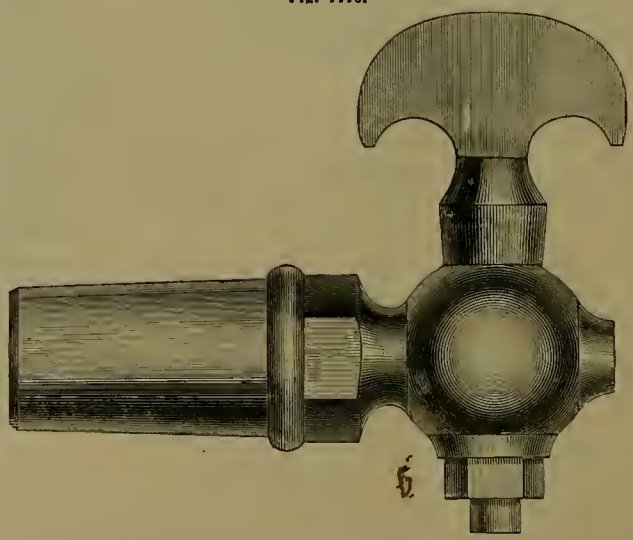
$\frac{1}{2}$ Inch Blank Shank.

Fig. 1115.



$\frac{5}{8}$ Inch Blank Shank.

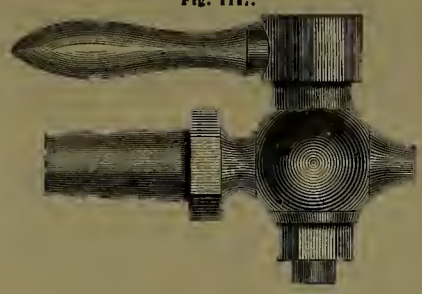
Fig. 1116.



$\frac{7}{8}$ Inch Blank Shank.

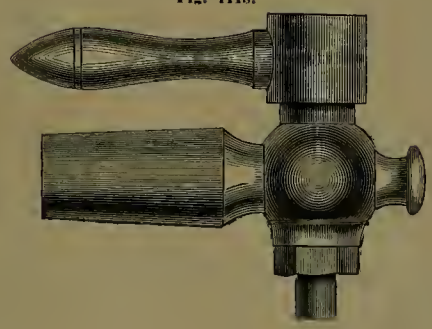
GAUGE, OR CYLINDER COCKS.

Fig. 1117.



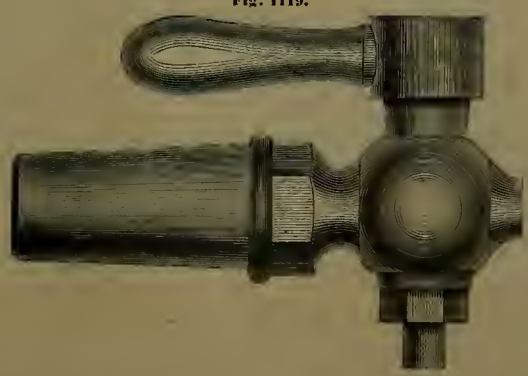
Blank Shank ..... $\frac{3}{8}$ Inch.

Fig. 1118.



Blank Shank ..... $\frac{1}{2}$ Inch.

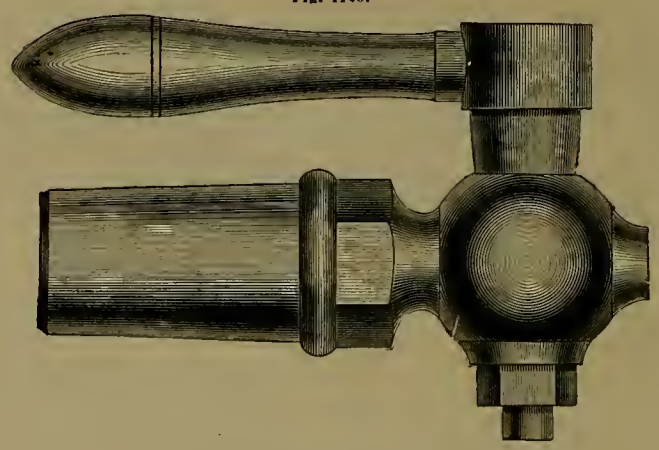
Fig. 1119.



Blank Shank ..... $\frac{5}{8}$ Inch.

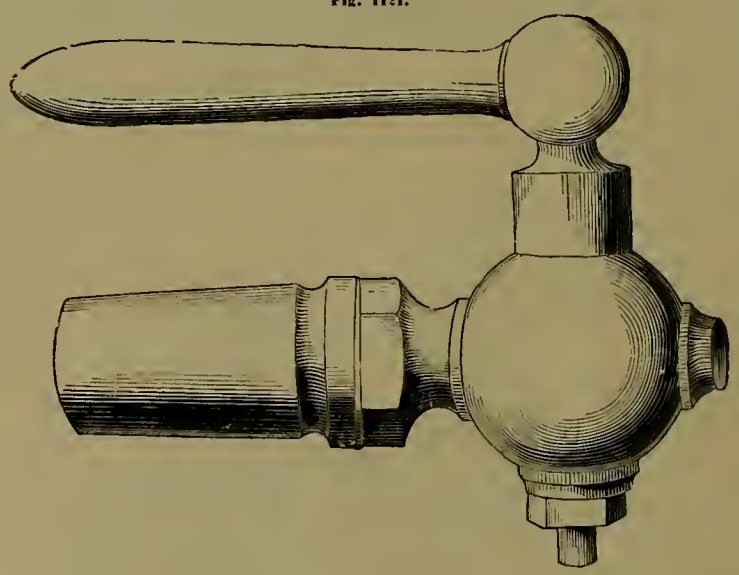
Gauge, or Cylinder Cocks.

Fig. 1120.



Blank Shank. ..... $\frac{7}{8}$ Inch.

Fig. 1121.

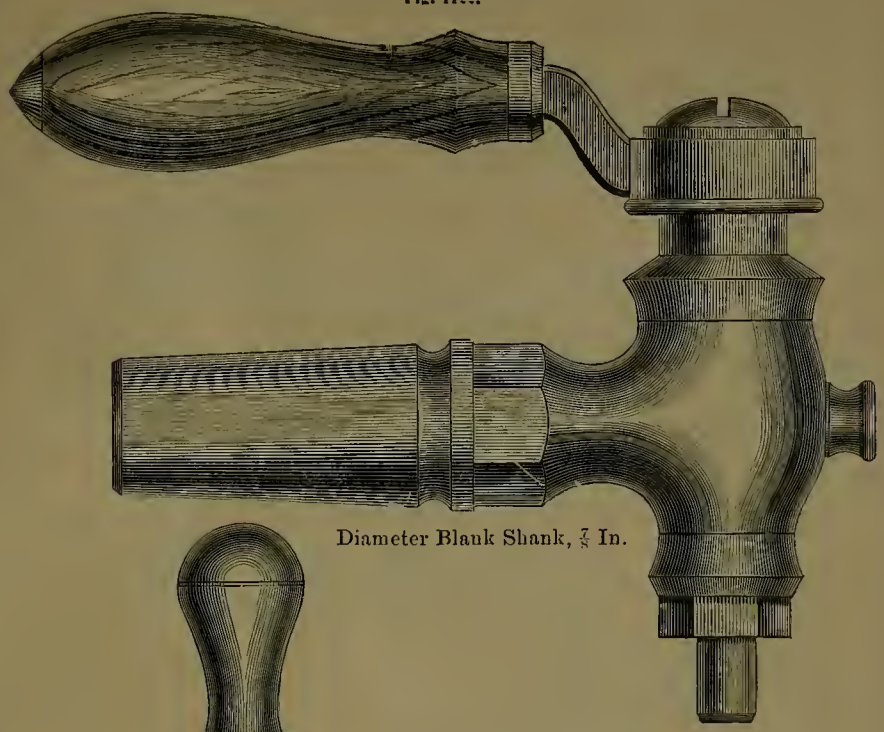


Diameter Blank Shank ..... $\frac{7}{8}$ Inch.

Made either with Straight or Key Discharge.

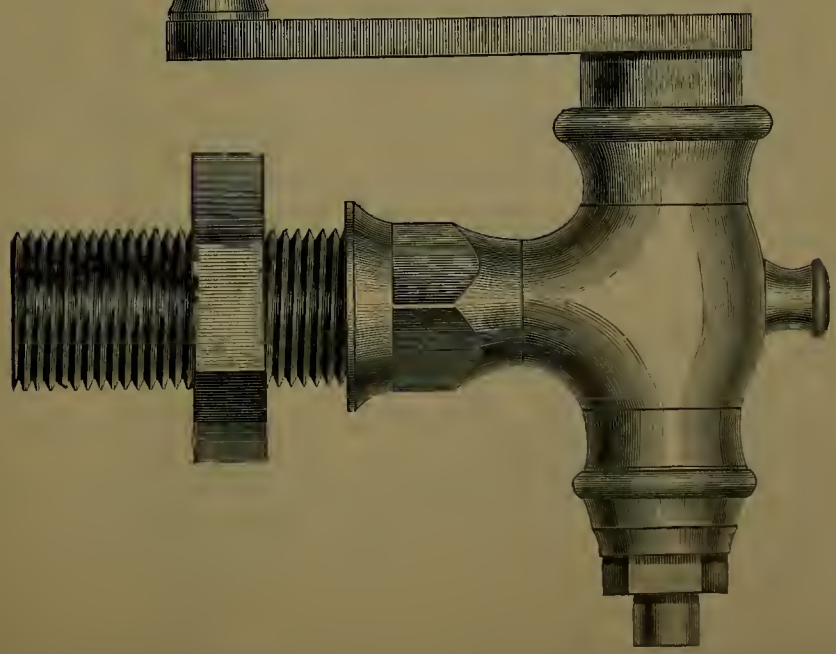
Gauge Cocks.

Fig. 1122.



Diameter Blank Shank, $\frac{7}{8}$ In.

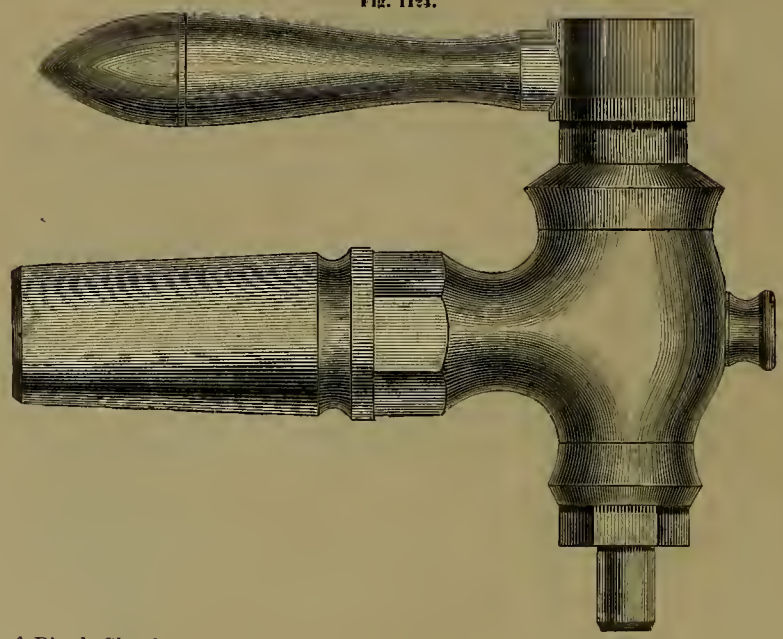
Fig. 1123.



Gauge Cocks.

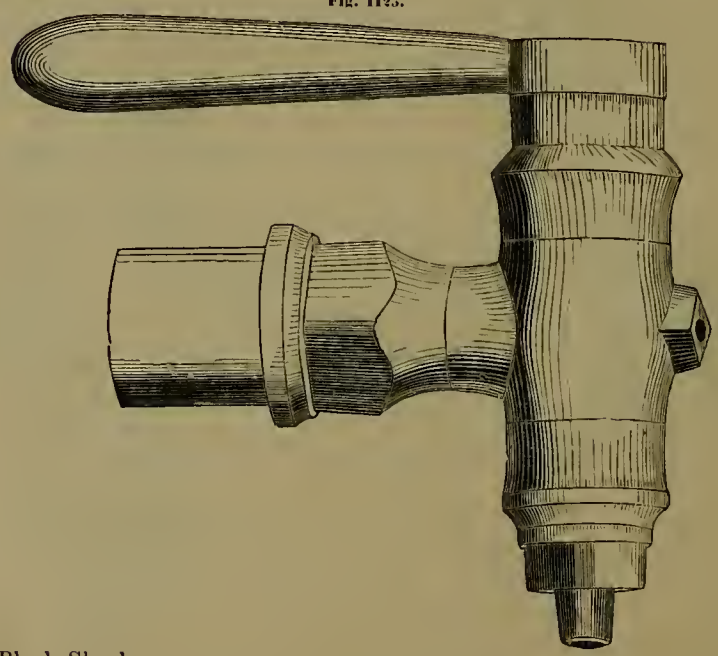
Full Size.

Fig. 1124.



Diameter of Blank Shank ..... $\frac{7}{8}$ Inch.

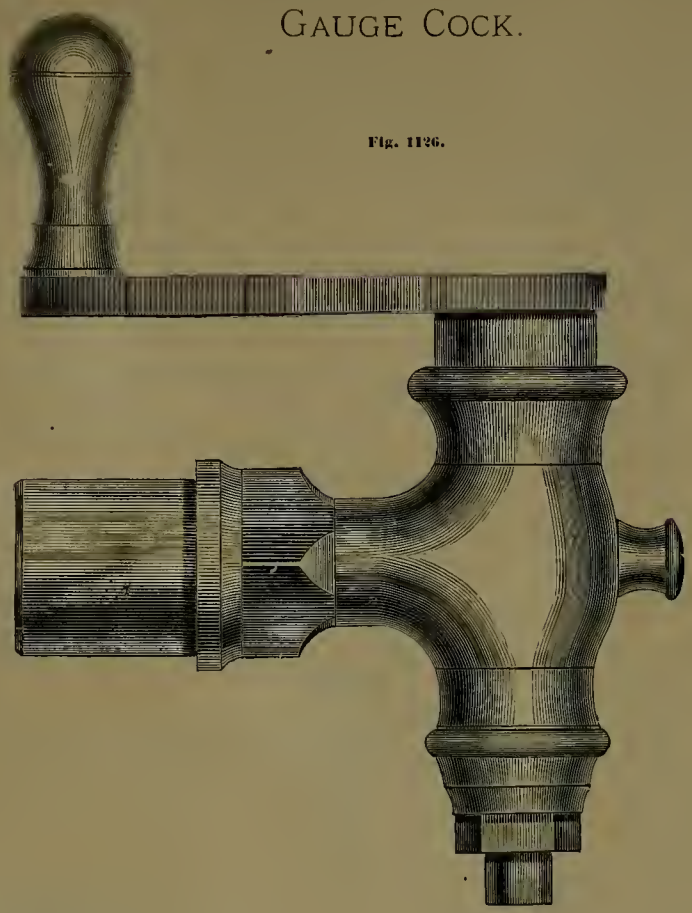
Fig. 1125.



Diameter of Blank Shank ..... 1 Inch.

Gauge Cock.

Fig. 1126.



Diameter of Blank Shank ....1⅛ Inches.

Regester Gauge Cock.

Fig. 1127.

Screwed for ½ and ¾ Inch Iron Pipe, or 1 Inch Blank Shank.

Plain Oil Cups.

Full Size.

Fig. 1128.

Fig. 1129.

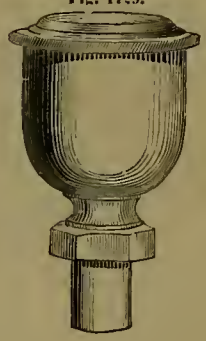


Fig. 1130.

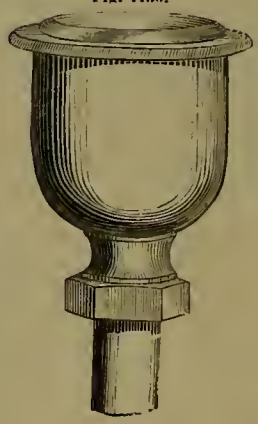


Fig. 1131.

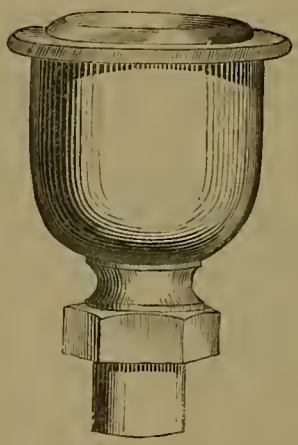
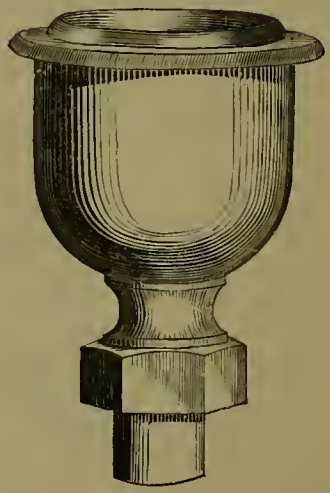


Fig. 1132.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Plain Oil Cups.

Full Size.

Fig. 1133.

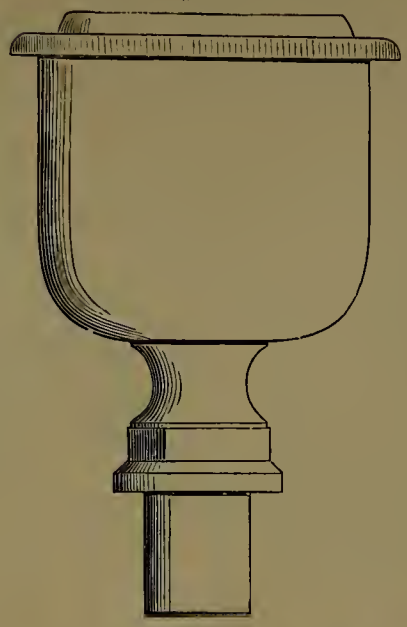
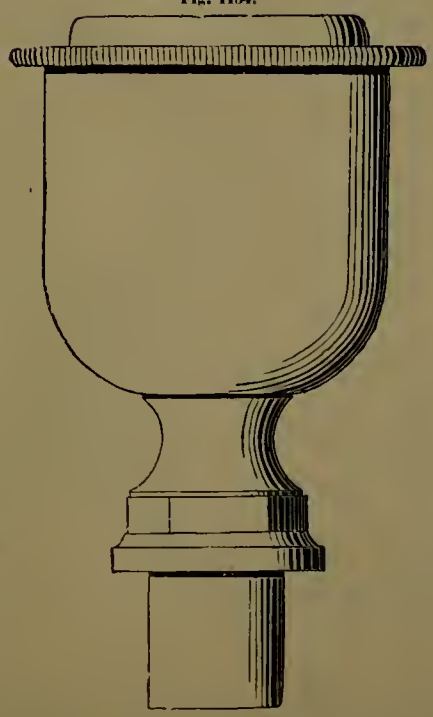


Fig. 1134.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Plain Oil Cups.

Full Size.

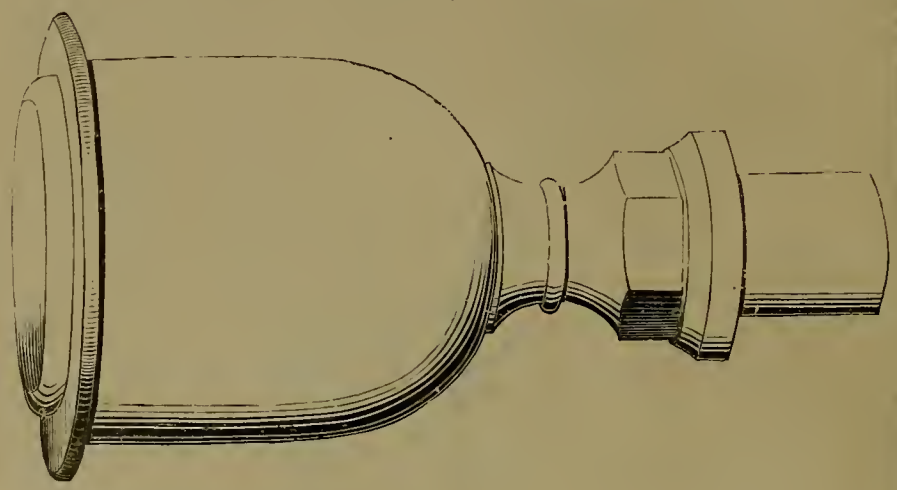


Fig. 1835.

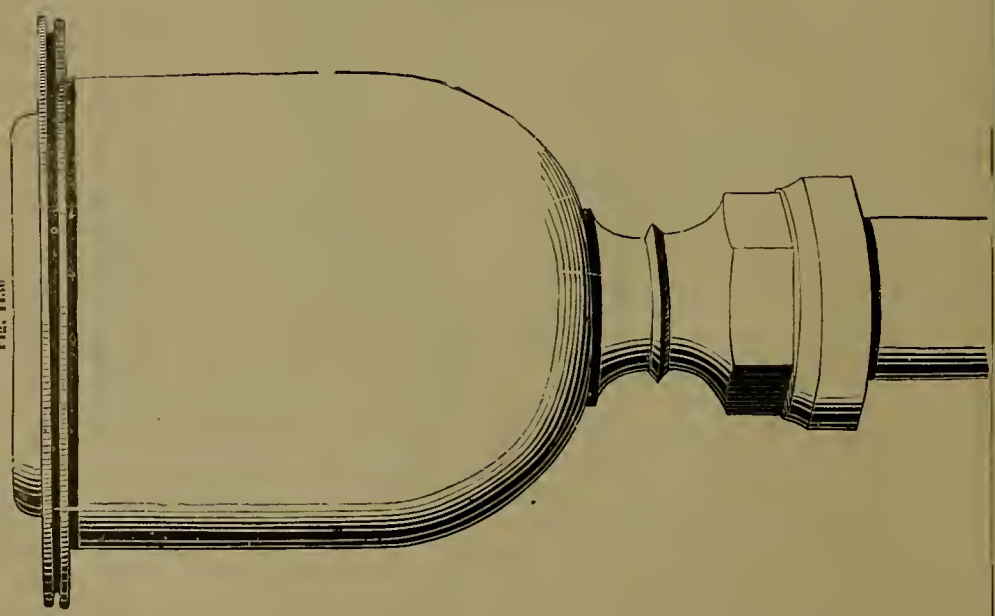


Fig. 1836

All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Fancy Top Oil Cups.

Full Size.

Fig. 1137.

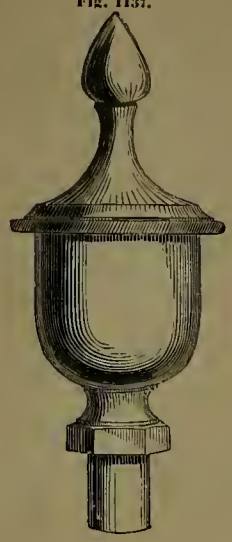


Fig. 1138.

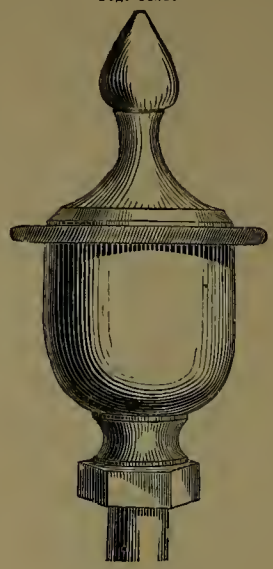


Fig. 1139.

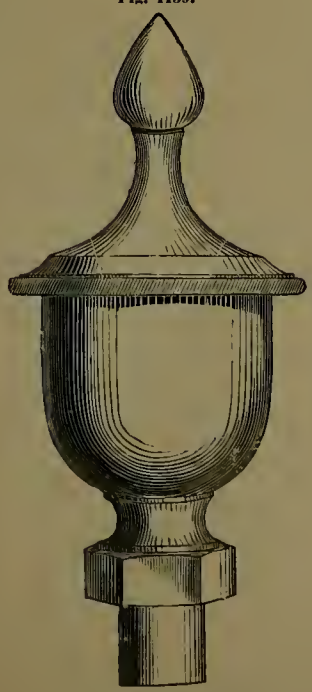
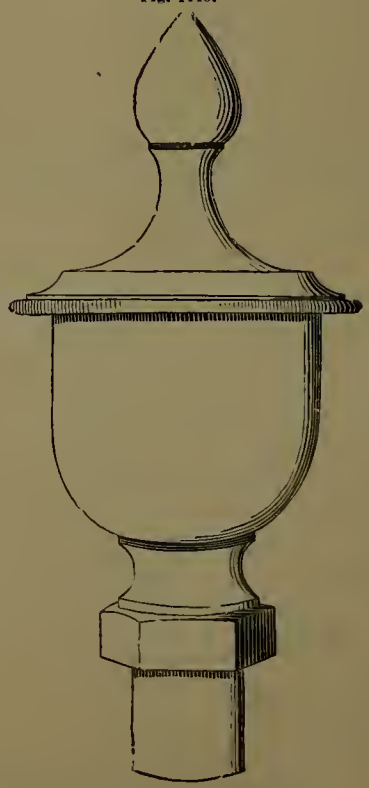


Fig. 1140.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Fancy Top Oil Cups.

Fig. 1142.

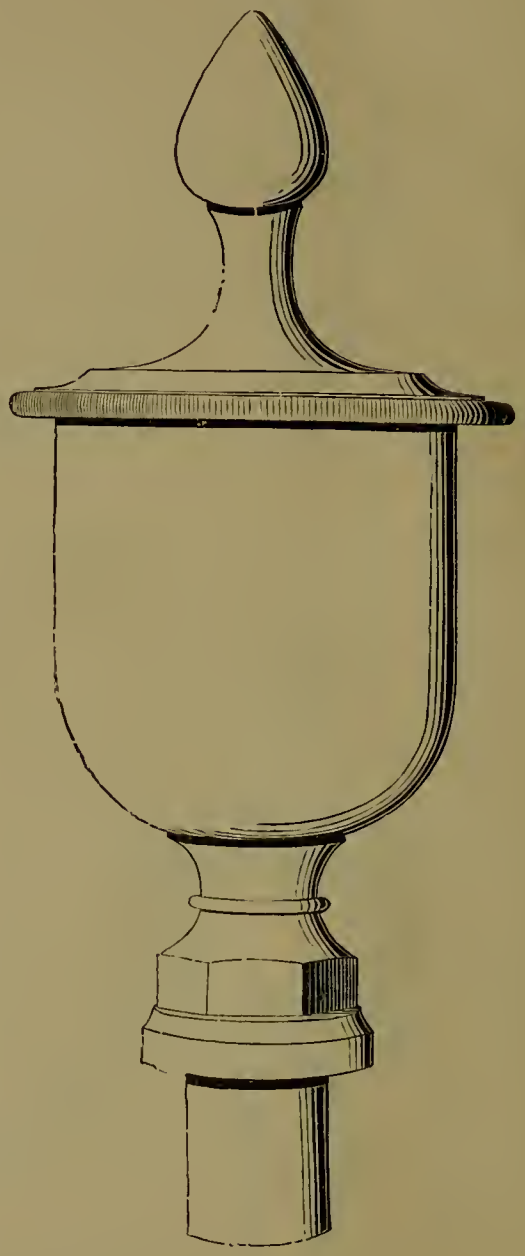
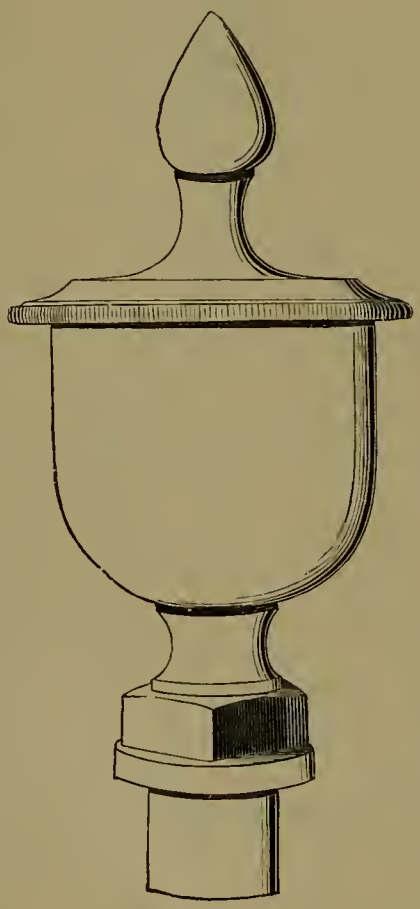


Fig. 1141.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Octagon Oil Cups.

Full Size.

Fig. 1143.

Fig. 1144.

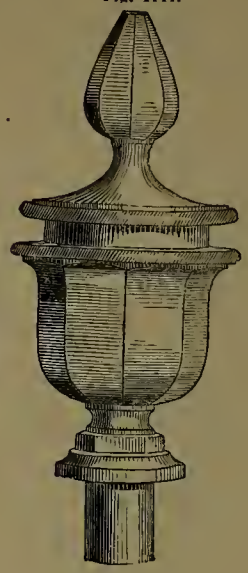


Fig. 1145.

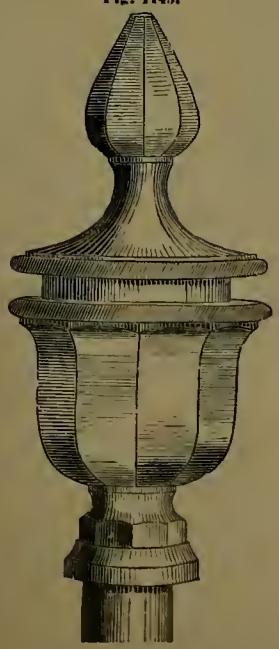
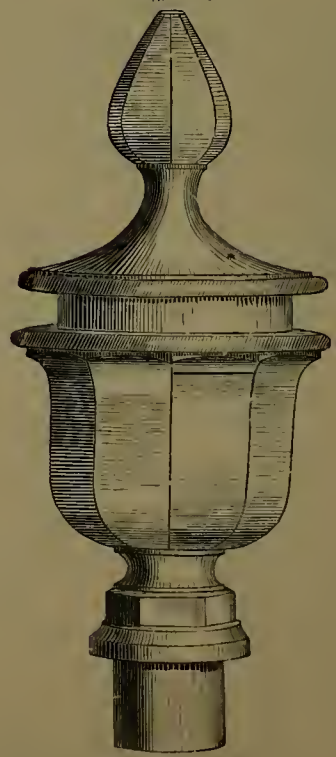


Fig. 1146.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Octagon Oil Cups.

Full Size.

Fig. 1147.

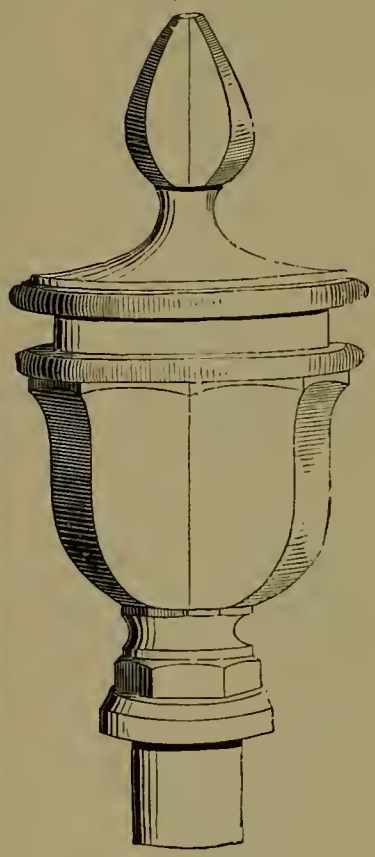
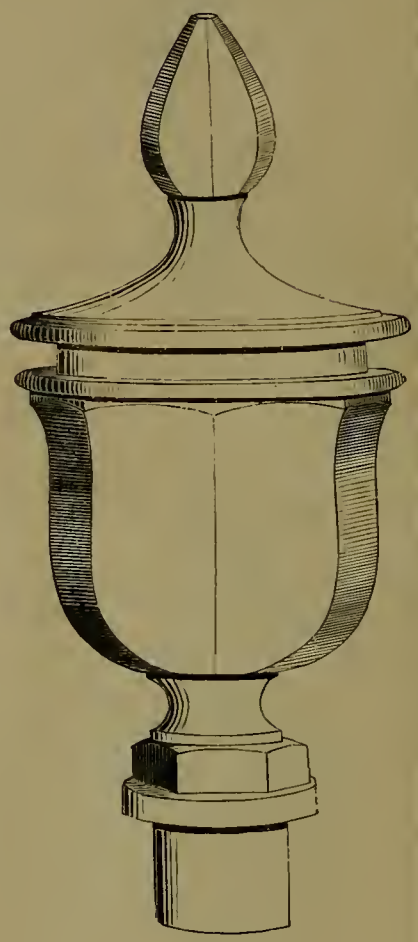


Fig. 1148.

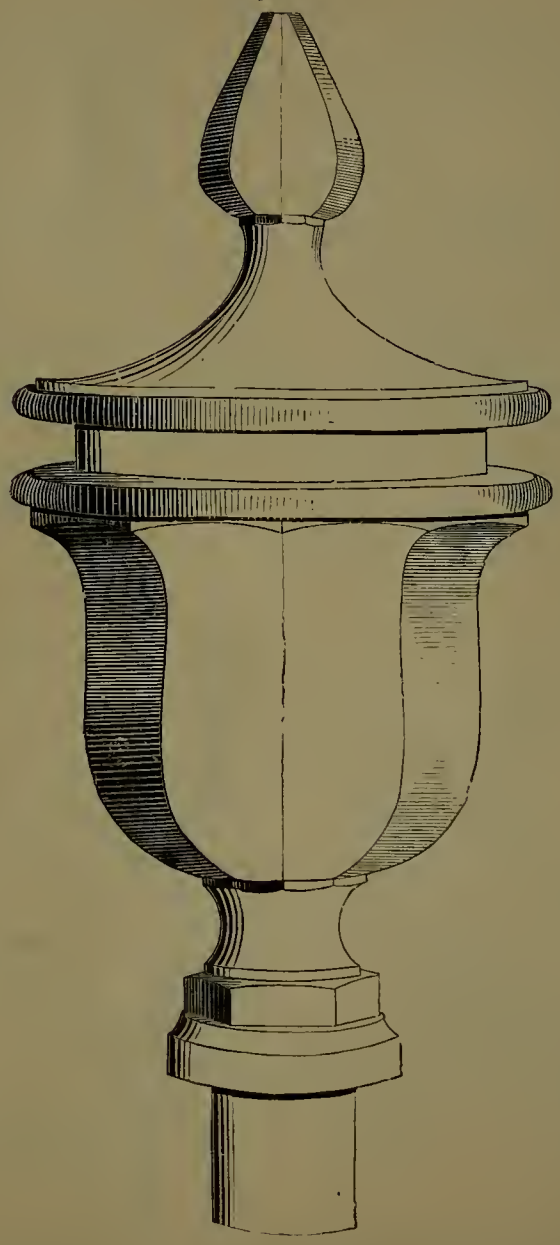


All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Octagon Oil Cup.

Full Size.

Fig. 1149.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Oil Cups.

WITH STOP COCK, T HANDLE.

Full Size.

Fig. 1150.

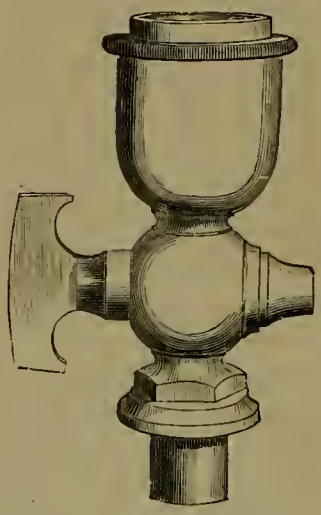


Fig. 1151.

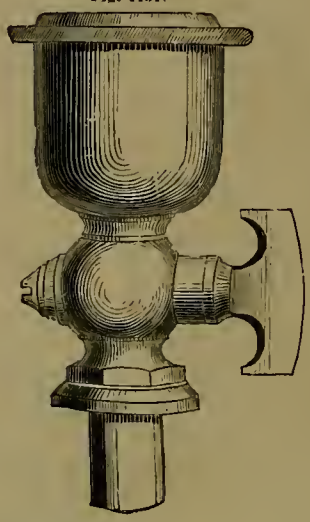


Fig. 1152.

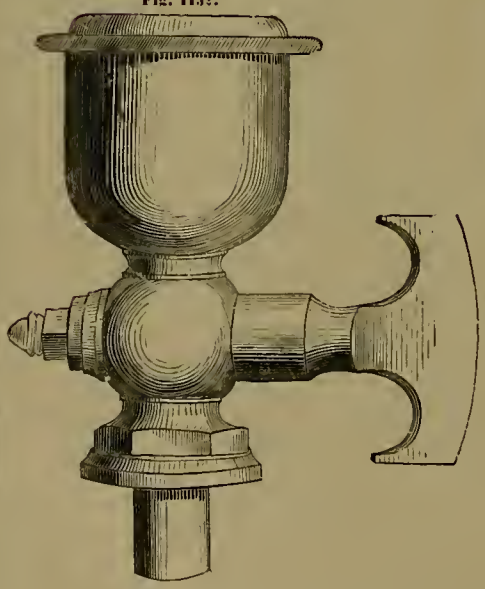
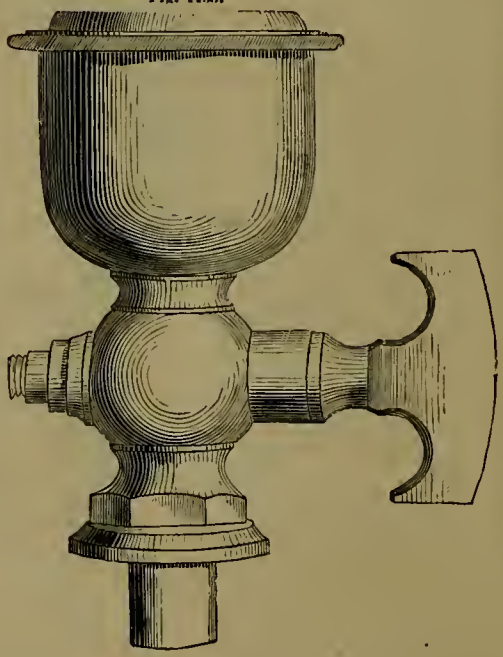


Fig. 1153.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Oil Cups.

WITH STOP COCK, T HANDLE.

Full Size.

Fig. 1154.

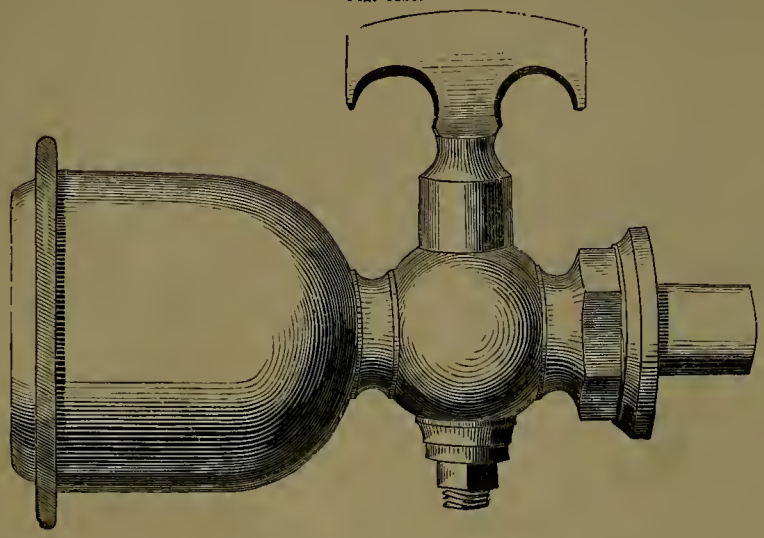
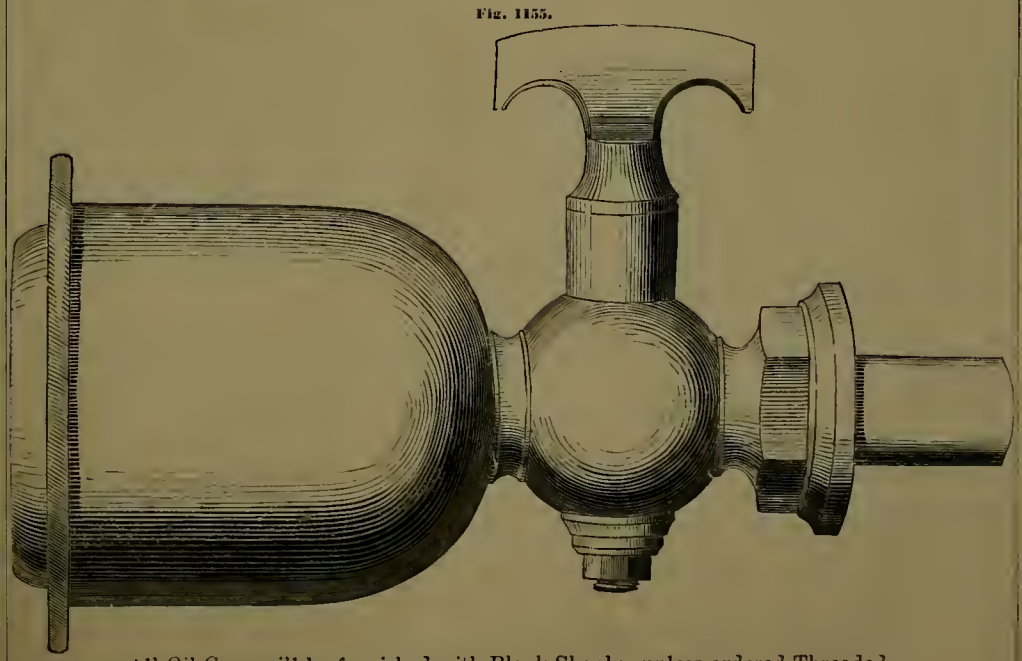


Fig. 1155.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Oil Cups.

WITH STOP COCK, LEVER HANDLE.

Full Size.

Fig. 1156.

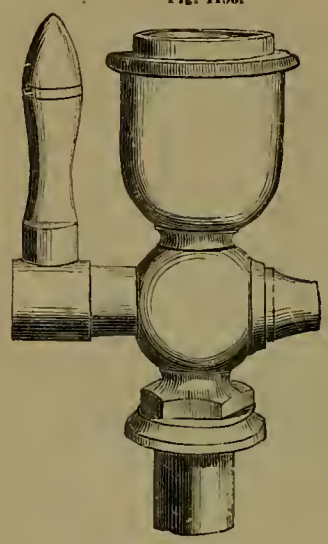


Fig. 1157.

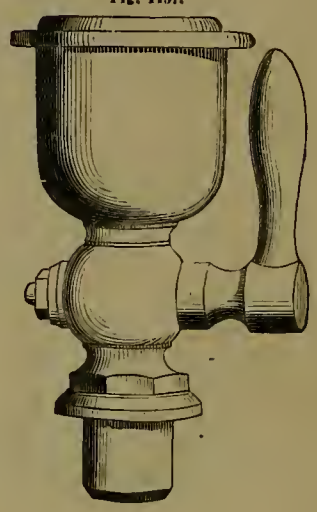


Fig. 1158.

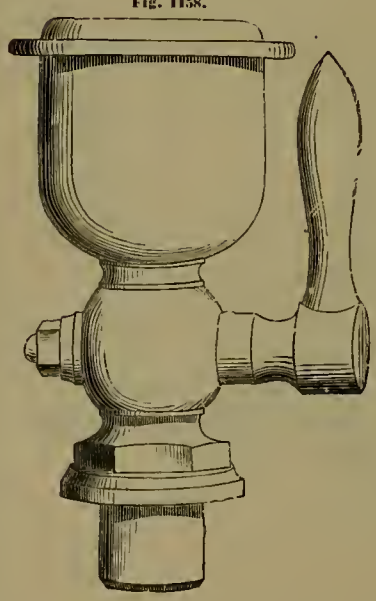
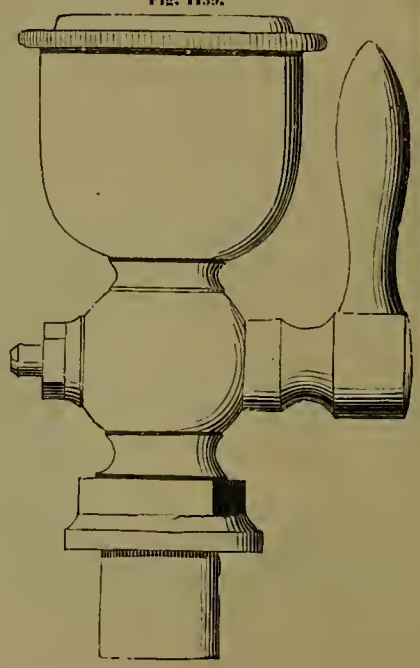


Fig. 1159.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Oil Cups.

With Stop Cock, Lever Handle.

Fig. 1160.

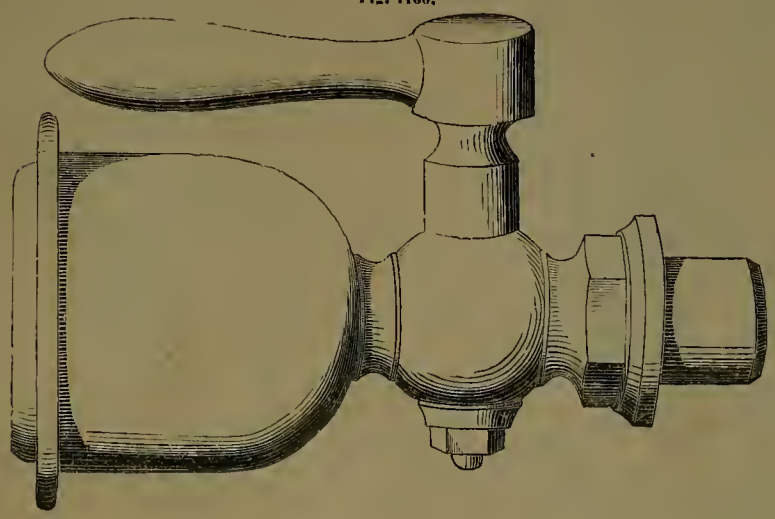
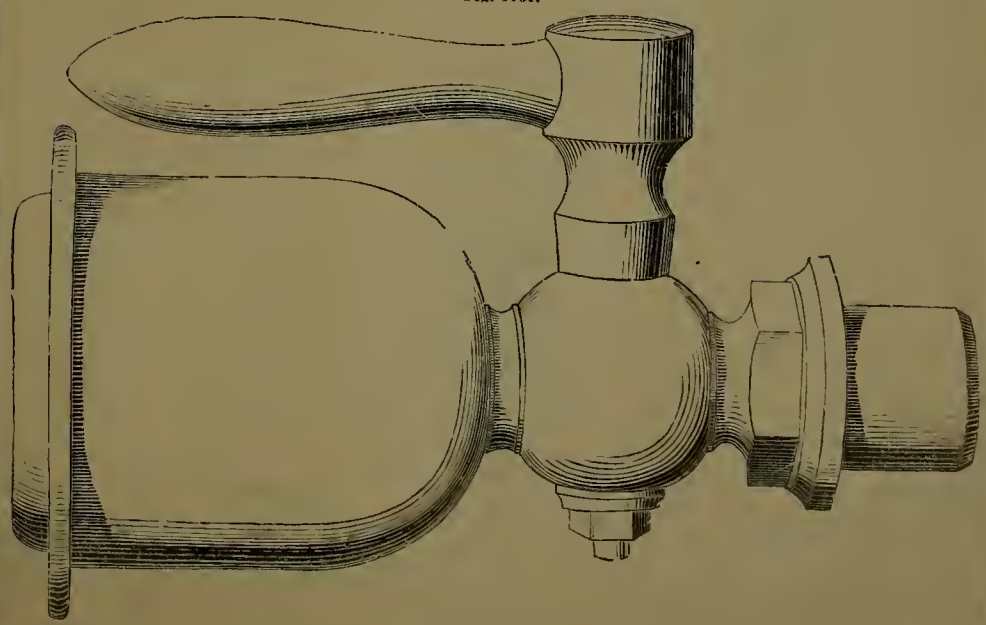


Fig. 1161.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

LONERGAN'S PATENT OILERS.

Fig. 1162.

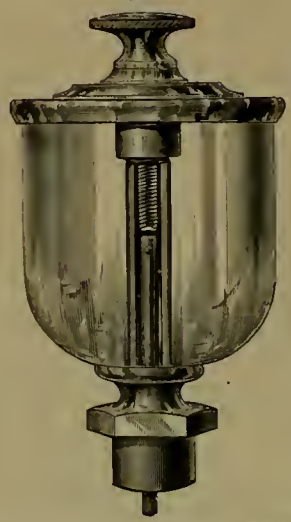
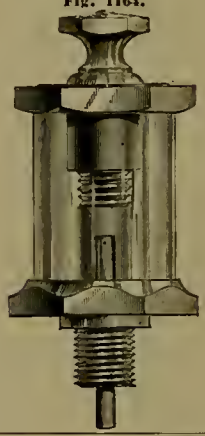


Fig. 1163.

NO.	OUTSIDE DIAM.	HEIGHT.	CAPACITY.	NO.	OUTSIDE DIAM.	HEIGHT.	CAPACITY.
20	1½ inch.	2⅞ inch.	½ ounce.	7	2½ inch.	4¼ inch.	1¼ ounce.
21	2 "	3⅛ "	⅝ "	8	3 "	5 "	3 "
22	2¼ "	3½ "	1¼ "	9	3¾ "	6 "	8 "
23	3 "	4½ "	3½ "	.....	.....	.....	.....
24	3½ "	5 "	8 "	.....	.....	.....	.....

OILER FOR SMALL BEARINGS.

Fig. 1164.



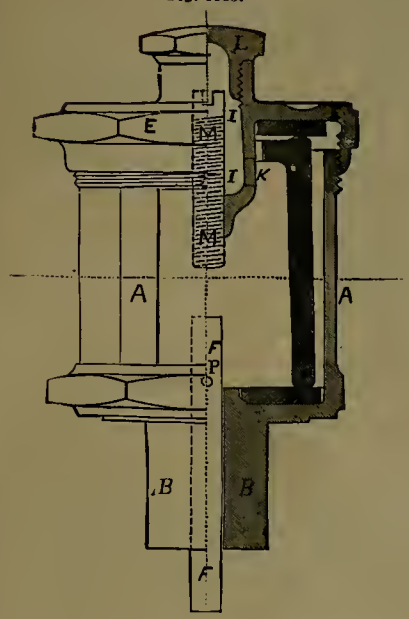
NUMBER.	OUTSIDE DIAMETER.	HEIGHT.	CAPACITY.
00	1⅛ inch.	2 inch.	$\frac{1}{16}$ ounce.
0	1¼ inch.	2 inch.	⅛ ounce.

All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

LONERGAN'S PATENT OIL CUPS.

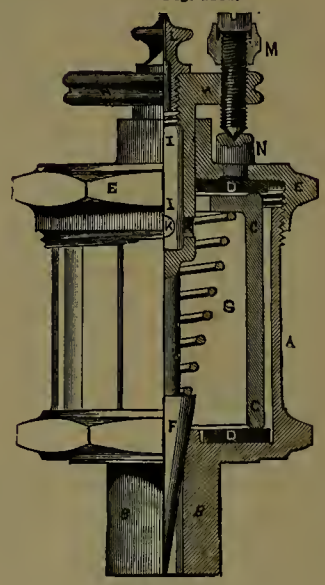
For Rotary Motion.

Fig. 1165.



Locomotive Guide Cup.

Fig. 1166.

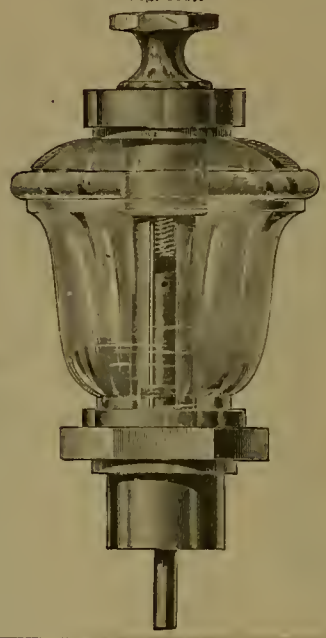


NO.	OUTSIDE DIAM.	HEIGHT.	CAPACITY.	NO.	OUTSIDE DIAM.	HEIGHT.	CAPACITY.
0	1 inch.	$1\frac{1}{2}$ inch.	$\frac{1}{8}$ ounce.	$\frac{1}{2}$	$1\frac{1}{8}$ inch.	$2\frac{1}{2}$ inch.	$\frac{1}{4}$ ounce.
30	1 "	$2\frac{1}{8}$ "	$\frac{1}{4}$ "	1	$1\frac{1}{4}$ "	$2\frac{3}{4}$ "	$\frac{5}{8}$ "
31	$1\frac{1}{4}$ "	$2\frac{3}{4}$ "	$\frac{5}{8}$ "	2	$1\frac{3}{4}$ "	$3\frac{1}{2}$ "	1 "
32	$1\frac{5}{8}$ "	$3\frac{1}{4}$ "	$1\frac{1}{8}$ "	3	2 "	4 "	$1\frac{1}{4}$ "
33	$1\frac{7}{8}$ "	$3\frac{3}{4}$ "	$1\frac{5}{8}$ "	4	$2\frac{3}{8}$ "	$4\frac{1}{2}$ "	$2\frac{1}{4}$ "
34	$2\frac{1}{4}$ "	$4\frac{1}{8}$ "	$2\frac{1}{2}$ "	5	$3\frac{1}{2}$ "	$5\frac{1}{2}$ "	$4\frac{1}{2}$ "
35	$3\frac{1}{2}$ "	$5\frac{1}{2}$ "	$4\frac{1}{2}$ "	6	$4\frac{1}{2}$ "	7 "	10 "
36	$4\frac{1}{2}$ "	7 "	10 "	.....	.....	.....	.....

All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

LONERGAN'S PATENT OILERS.

Fig. 1167.



NUMBER.	OUTSIDE DIAMETER.	HEIGHT.	CAPACITY.
41	$1\frac{1}{2}$ inch.	$3\frac{1}{4}$ inch.	$1\frac{1}{8}$ ounce.
42	$2\frac{1}{3}$ "	$4\frac{1}{4}$ "	3 "
43	$2\frac{1}{2}$ "	$5\frac{1}{4}$ "	5 "
44	3 "	6 "	8 "

SHAFTING OILERS.

Fig. 1168.

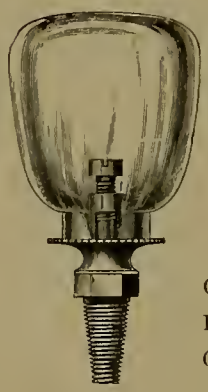


Fig. 1169.

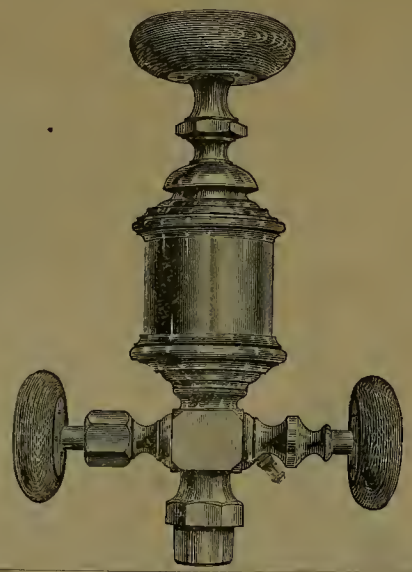
Outside diameter . . .	$2\frac{1}{2}$ inches.
Height.....	4 inches
Capacity	2 ounces.

All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

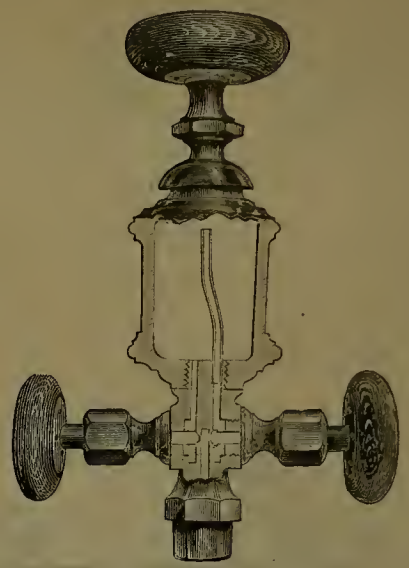
LONERGAN'S PATENT LUBRICATORS.

Plain Direct Acting.
Fig. 1170.

Automatic.
Fig. 1171.



Combination.
Fig. 1172.

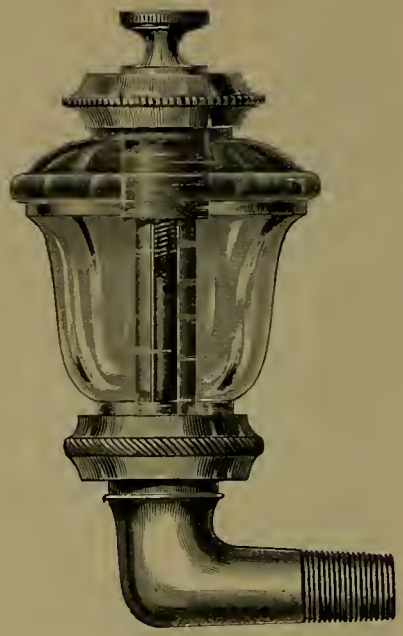


SIZE OUTSIDE DIAM.	HEIGHT.	CAPACITY.	SIZE OUTSIDE DIAM.	HEIGHT.	CAPACITY.	SIZE OUTSIDE DIAM.	HEIGHT.	CAPACITY.
1 inch.	4½ inch.	¾ ounce.	1½ inch.	6 inch.	1½ ounce.	1½ inch.	5½ inch.	1½ ounce.
1¼ "	5 "	1 "	2 "	7 "	3 "	2 "	7 "	3 "
1½ "	6 "	1½ "	2½ "	8 "	6 "	2½ "	8 "	6 "
2 "	7 "	3 "	3 "	9 "	10 "	3 "	9 "	10 "
2½ "	8 "	6 "	4 "	10 "	1½ pint.	4 "	10 "	1½ pint.
3 "	9 "	10 "	.....	.....	.....	.....	.....	.....

All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

Lonergan's Loose Pulley Oiler.

Fig. 1173.

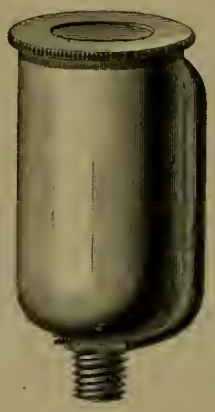


Oiler attached to Loose Pulley.

NUMBER.	OUTSIDE DIAMETER.	HEIGHT.	CAPACITY.
25	$1\frac{1}{4}$ inches.	$2\frac{3}{4}$ inches.	$\frac{5}{32}$ ounce.
26	$1\frac{5}{8}$ inches	$3\frac{1}{4}$ inches	$1\frac{1}{5}$ ounce.

Loose Pulley Lubricator.

Fig. 1174.



Outside View.

Inside View.

No. 0 ..... Adopted for Pulleys from 6 to 8 inches diameter.
No. 1 ..... " " " " 8 to 14 " "
No. 2 ..... " " " " 14 inches upwards.

HOLLAND PATENT CUPS.

For Oline Compound.

TIN CUP.

Fig. 1175.

	Diam.	Height.
No. 0	2 in.	$1\frac{7}{8}$ in.
No. 1	$2\frac{1}{4}$ in.	$2\frac{3}{4}$ in.

SPUN BRASS CUP.

Fig. 1176.

	Diam.	Height.
No. 2	$1\frac{3}{4}$ in.	$2\frac{1}{2}$ in.
No. 3	$2\frac{1}{4}$ in.	3 in.

CAST BRASS CUP.

No. 1177.

	Diam.	Height.
No. 9	$1\frac{3}{4}$ in.	$2\frac{3}{4}$ in.
No. 10	2 in.	3 in.
No. 11	$2\frac{1}{4}$ in.	$3\frac{1}{4}$ in

GLASS SHAFTING CUP.

Fig. 1178.

Diameter	No. 4, $2\frac{1}{4}$ in.
Height	No. 4, $3\frac{1}{2}$ in.

GLASS CUP.

Brass Mounted.

Fig. 1179.

	Diam.	Height
No. 12	$2\frac{1}{4}$ in.	$3\frac{1}{2}$ in.
No. 13	$2\frac{3}{4}$ in.	$4\frac{1}{4}$ in.
No. 14	$3\frac{1}{4}$ in.	$4\frac{3}{4}$ in.

NATHAN & DREYFUS PATENT OILERS.

Fig. 1180.

No. 9.

Fig. 1181.

No. 10.

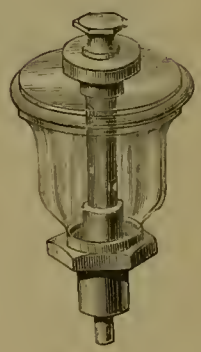
Fig. 1182.

No 13 W. B.

Fig. 1183.

No. 15 to 22.

Fig. 1184.



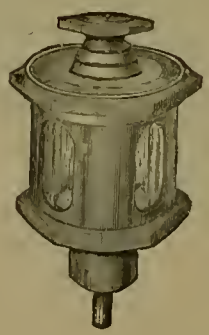
No. 24 to 26.

Fig. 1185.

A to D.

Shell Cased.

Fig. 1186.



No 20 to 100.

Skeleton

Fig. 1187.

No. 30 to 150.

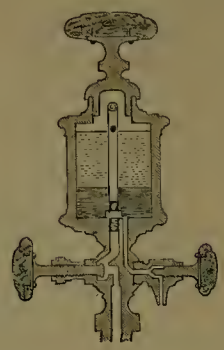
All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

NATHAN & DREYFUS SELF-ACTING LUBRICATORS.

Plain.

Fig. 1188.

Interior View.

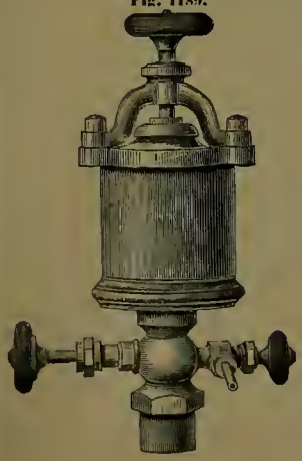


Size—Inches	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	4	5	6	7
Capacity—Pints	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{5}$	$\frac{1}{3}$	$\frac{1}{2}$	$1\frac{1}{2}$	3	5	7

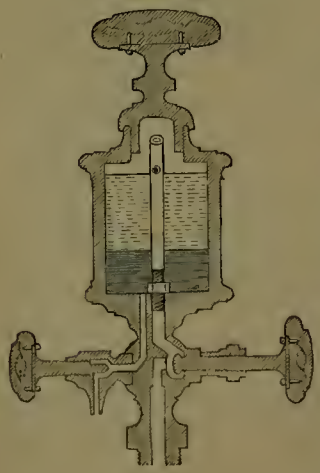
FOR LOCOMOTIVE AND MARINE ENGINES.

With Yoke.

Fig. 1189.



Interior View.



Cross Handle, Outside Thread, Loose Disk Valve.

Fig. 1190.

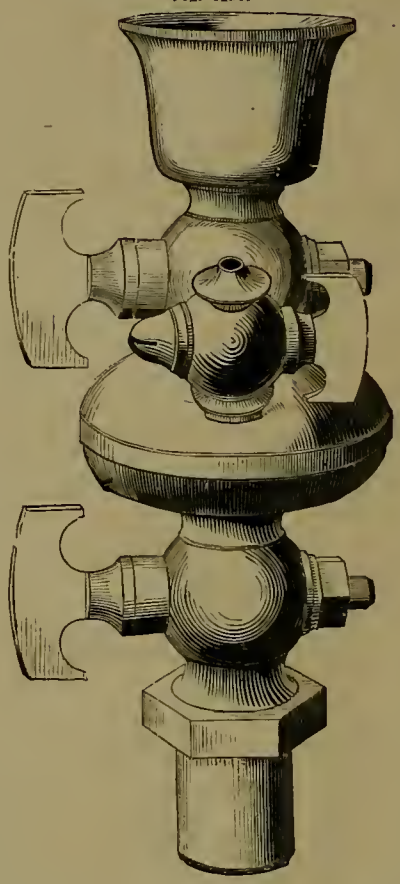
Size—Inches	3	4	5
Capacity—Pints	$\frac{1}{2}$	$1\frac{1}{2}$	3

All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

Globe Oil Cup.

Steam Metal.

Fig. 1191.



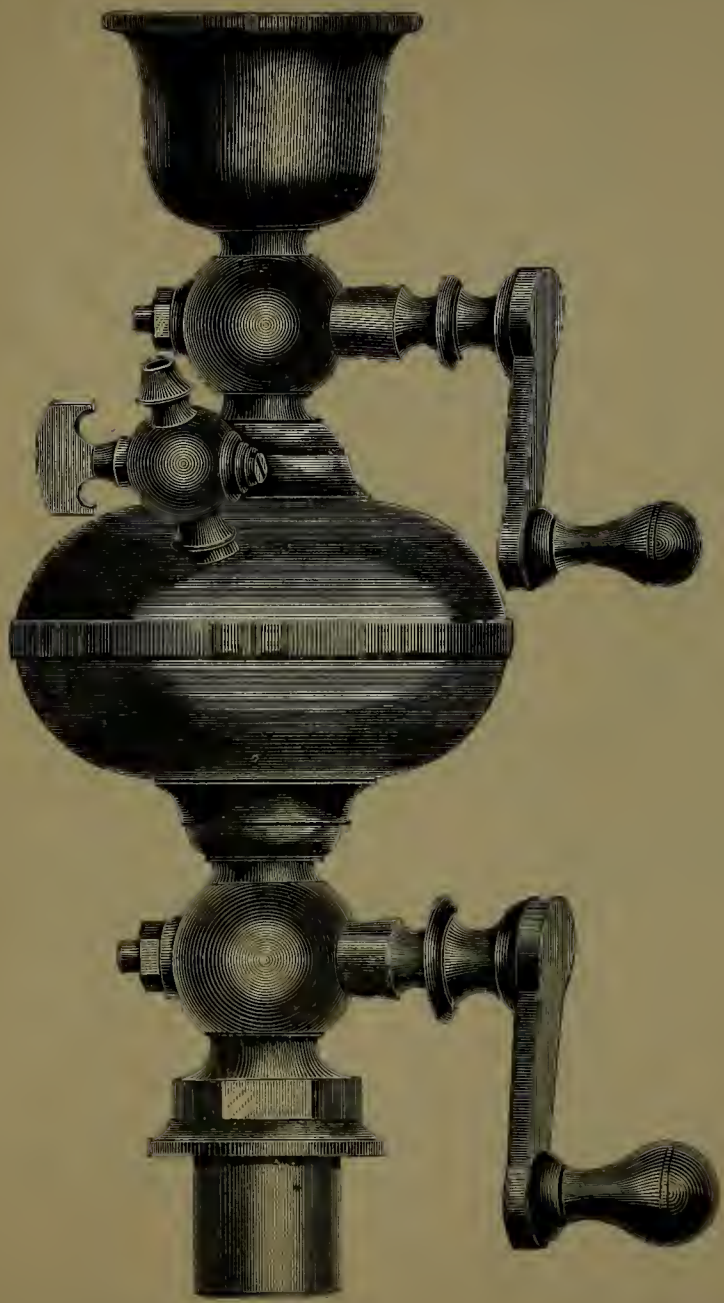
No. 0.	1 inch Globe		Cuts to $\frac{1}{4}$ inch	Iron Pipe.
No. 00.	$1\frac{1}{4}$ " "		" $\frac{3}{8}$ "	"
No. 1.	$1\frac{1}{2}$ " "		" $\frac{1}{2}$ "	"
No. 2.	$1\frac{1}{2}$ " "		" $\frac{1}{2}$ "	"
No. 3.	$2\frac{1}{4}$ " "		" $\frac{1}{2}$ "	"
No. 4.	$2\frac{1}{2}$ " "		" $\frac{3}{4}$ "	"
No. 5.	3 " "		" $\frac{3}{4}$ "	"
No. 6.	$3\frac{1}{2}$ " "		" $\frac{3}{4}$ "	"

All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Globe Oil Cup.

Lever Handle.

Fig. 1192.



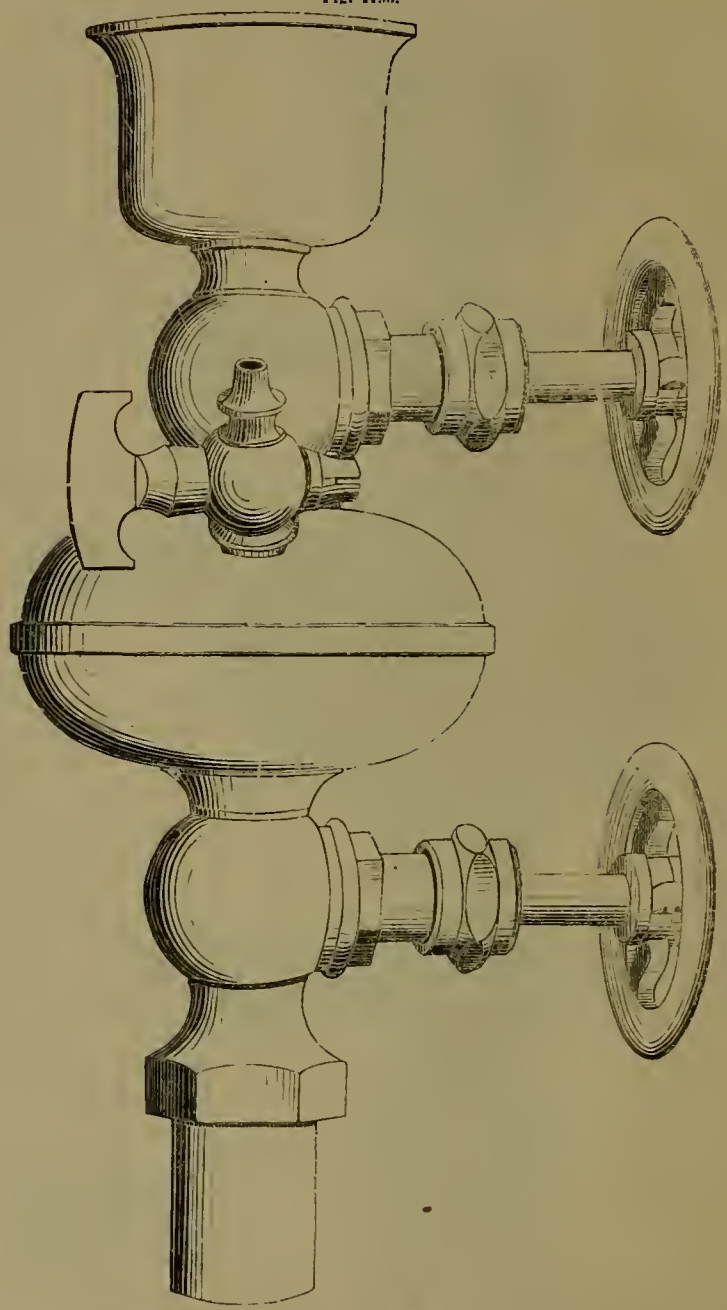
No. 7. 4 inch diameter of Globe..... Cuts to $\frac{3}{4}$ inch Iron Pipe.
No. 8. $4\frac{1}{2}$ inch diameter of Globe..... Cuts to 1 inch Iron Pipe.

All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Compression Globe Oil Cup.

Steam Metal.

Fig. 1193.



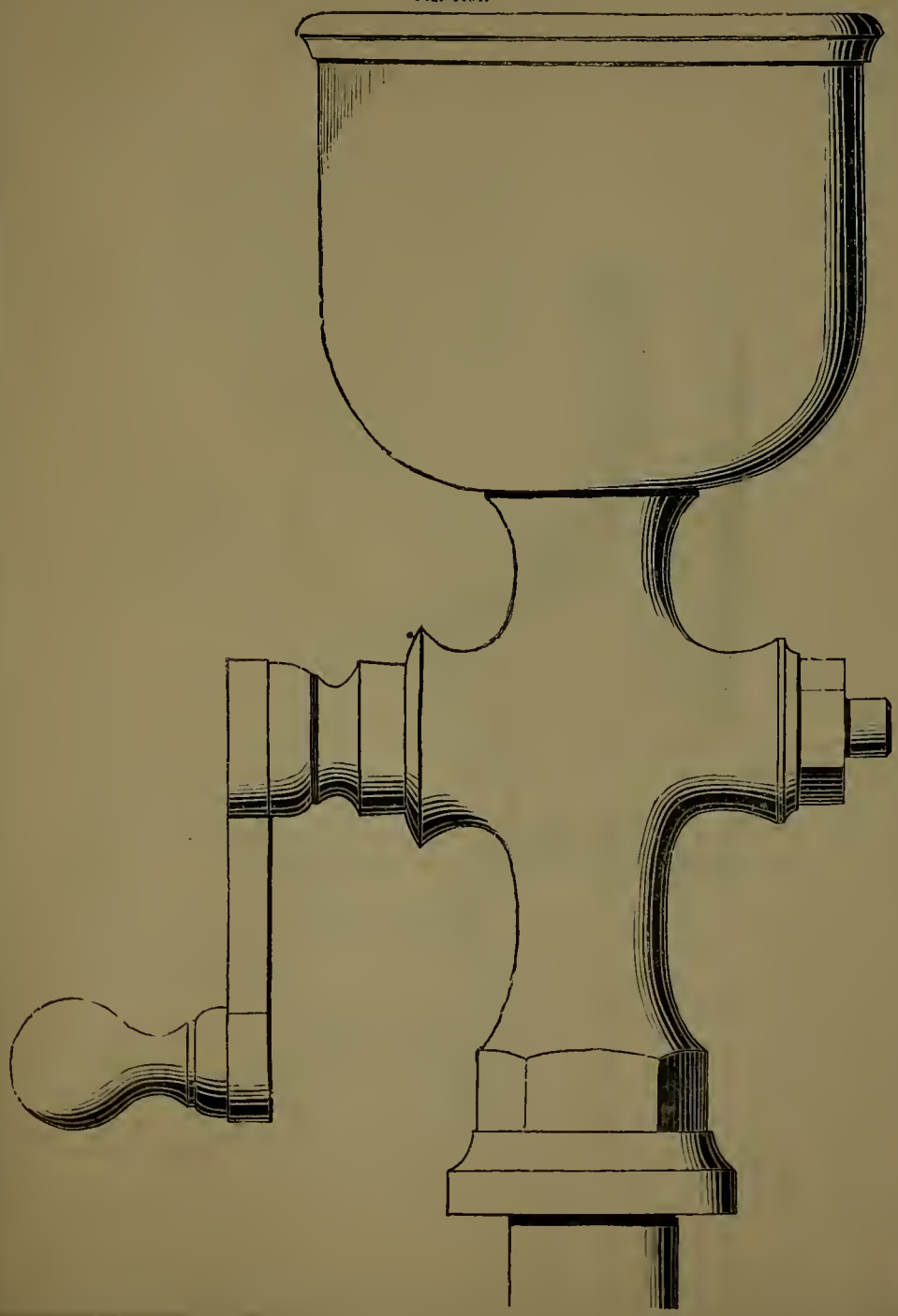
No. 1.	2 inch Globe....	Cuts to ½ inch Iron Pipe.		No. 4.	3 inch Globe	Cuts to ¾ inch Iron Pipe.
No 2.	2¼ " "	" ½ " "		No. 5.	3½ " " ...	" ¾ " "
No. 3.	2½ " "	" ¾ " "				

All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

TALLOW OIL CUP.

Full Size.

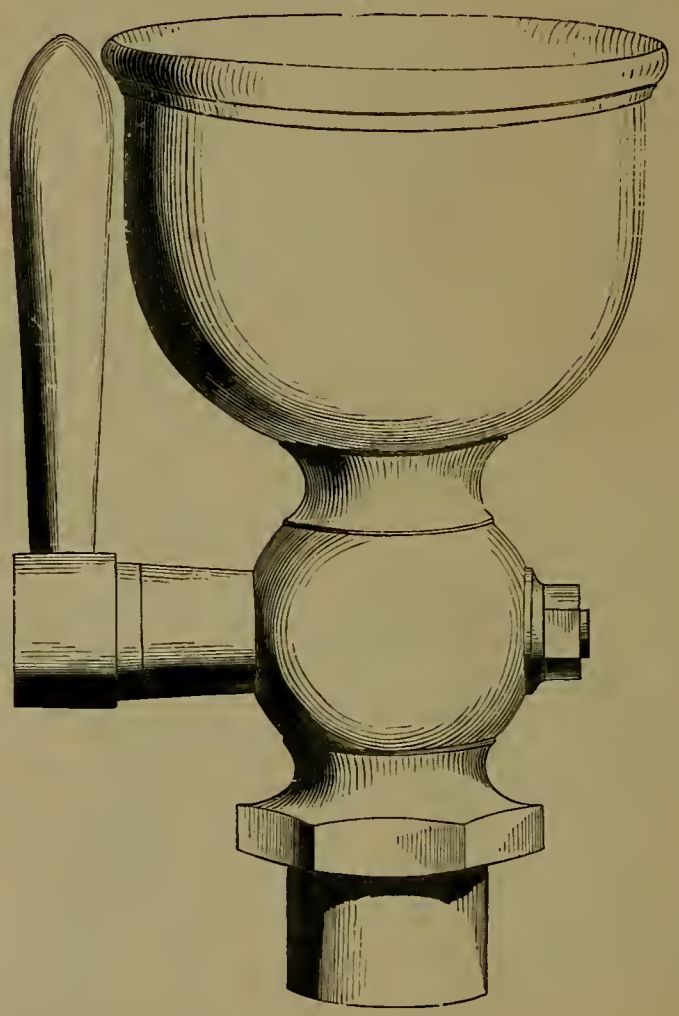
Fig. 1194.



Tallow Oil Cup.

Full Size.

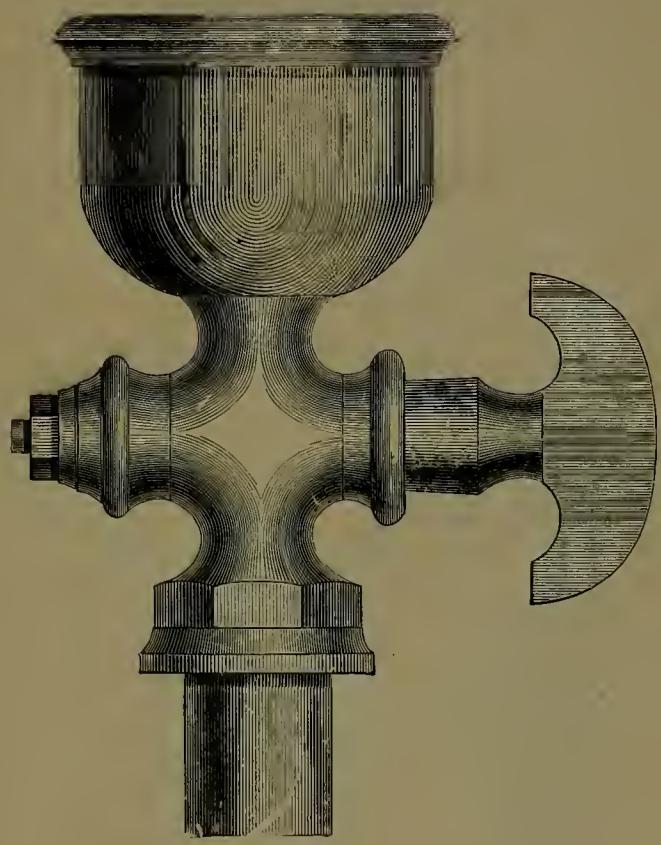
Fig. 1195.



All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Tallow Oil Cup.

Fig. 1196.



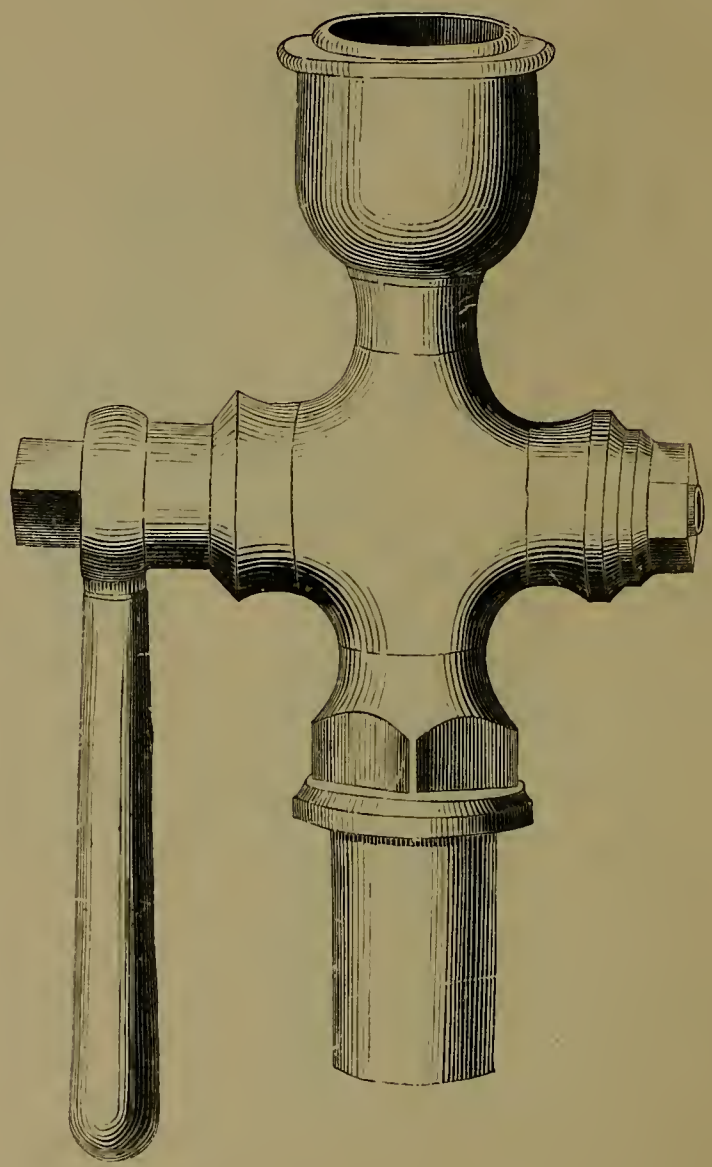
No. 1.	Diameter of Bowl, 2 inches			Cuts to ½ inch Iron Pipe.
No. 2.	"	" 3 "		" ¾ " "
No. 3.	"	" 3½ "		" ¾ " "

All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Hollow Plug Oil Cup.

Steam Metal.

Fig. 1197.



Diameter of Bowl, $1\frac{1}{2}$ inches..... ... .Cuts to $\frac{1}{2}$ inch Iron Pipe.

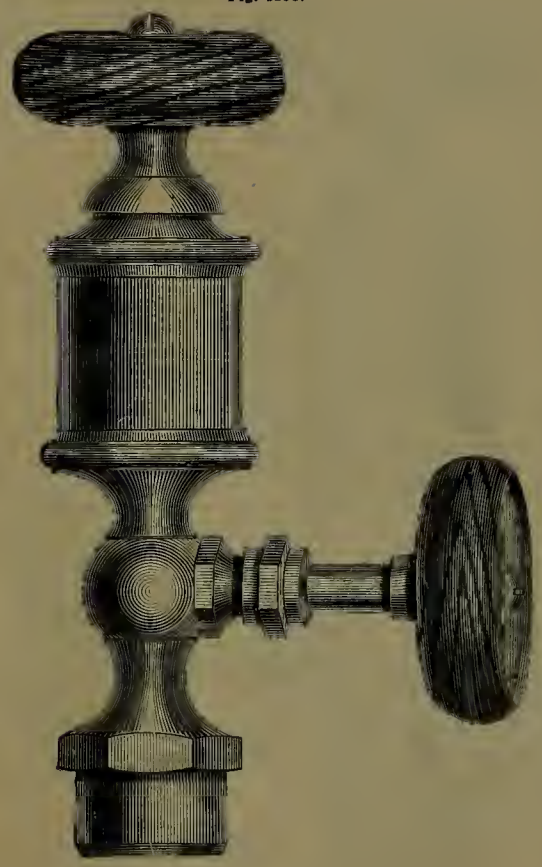
All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

Plain Lubricator.

Full Size.

WOOD HANDLES.

Fig. 1198.



Diameter, 1 inch ....Cuts to ½ inch Iron Pipe.

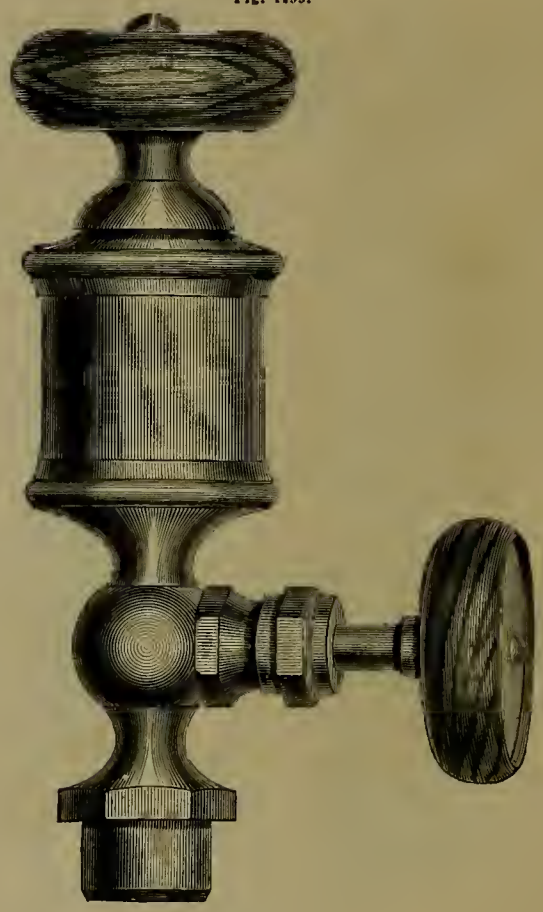
All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

PLAIN LUBRICATOR.

Full Size.

WOOD HANDLES.

Fig. 1199.



Diameter, $1\frac{1}{4}$ inches..... .... Cuts to $\frac{1}{2}$ inch Iron Pipe.

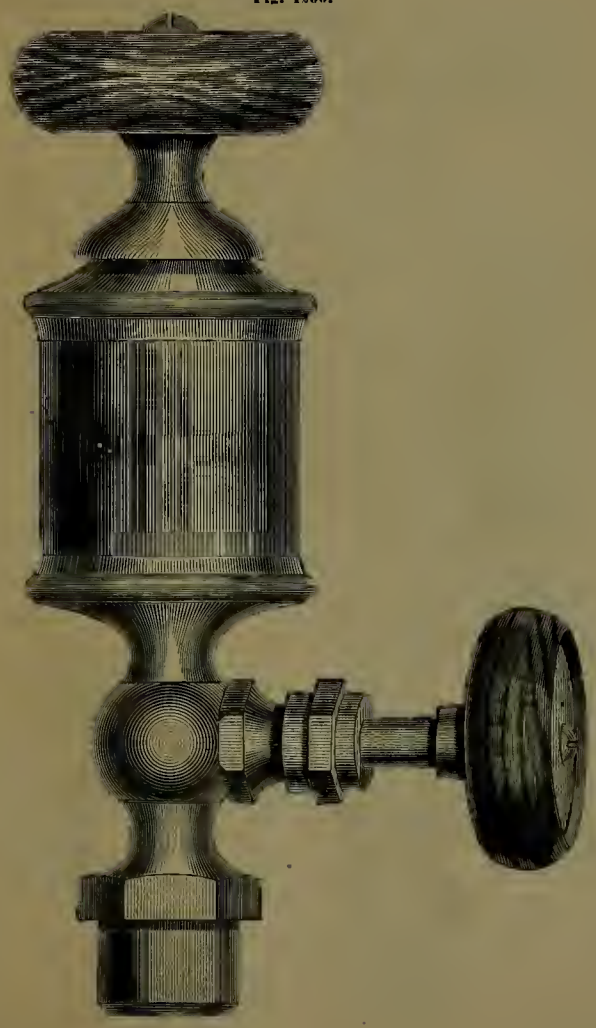
All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

Plain Lubricator.

Full Size.

WOOD HANDLES.

Fig. 1300.



Diameter, 1½ inches ..... Cut to ½ inch Iron Pipe.

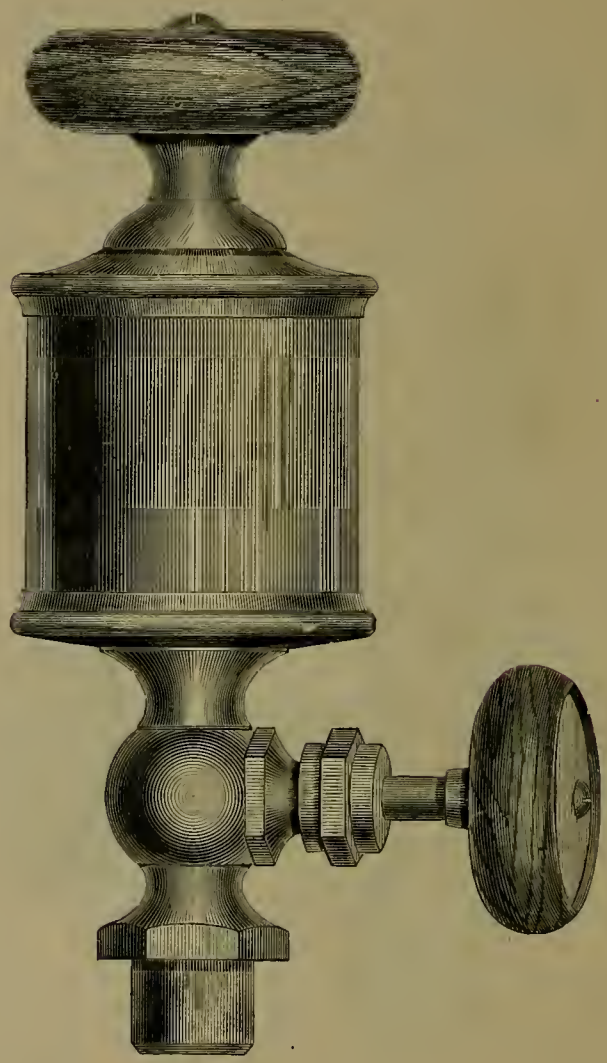
All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

Plain Lubricator.

Full Size.

WOOD HANDLES.

Fig. 1201.



Diameter, $1\frac{3}{4}$ Inches..... Cuts to $\frac{1}{2}$ inch Iron Pipe.

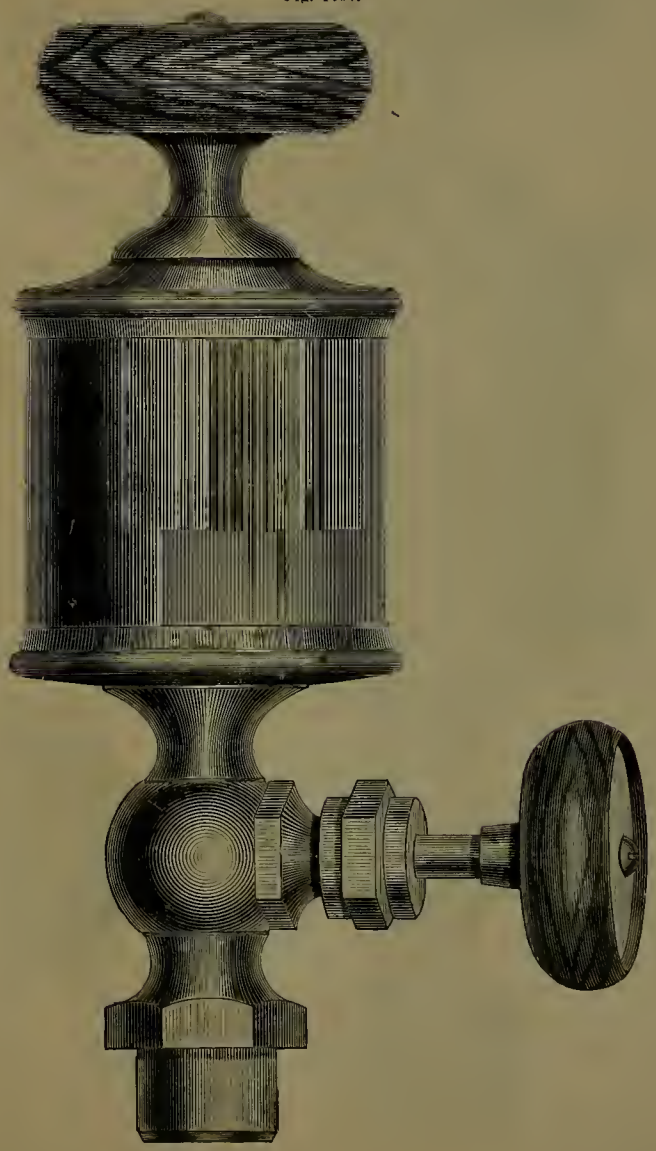
All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

Plain Lubricator.

Full Size.

WOOD HANDLES.

Fig. 1202.



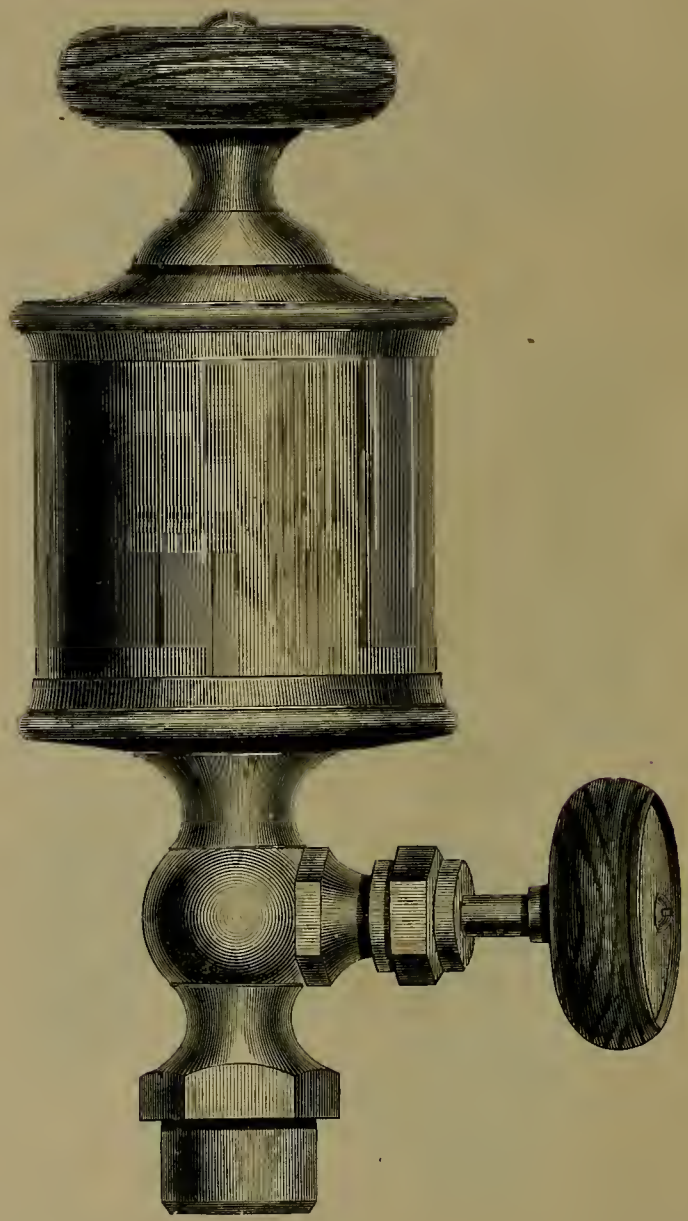
Diameter, 2 inches .... Cuts to ½ inch Iron Pipe.

All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

Plain Lubricator.

Full Size.

Fig. 1203.



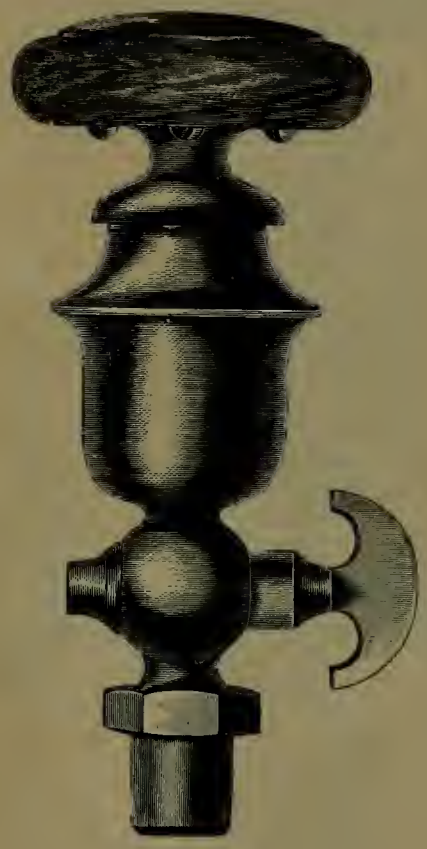
Diameter, $2\frac{1}{4}$ inches..... Cuts to $\frac{3}{4}$ inch Iron Pipe.

All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

LUBRICATOR.

Wood Top. T Handle.

Fig. 1204.



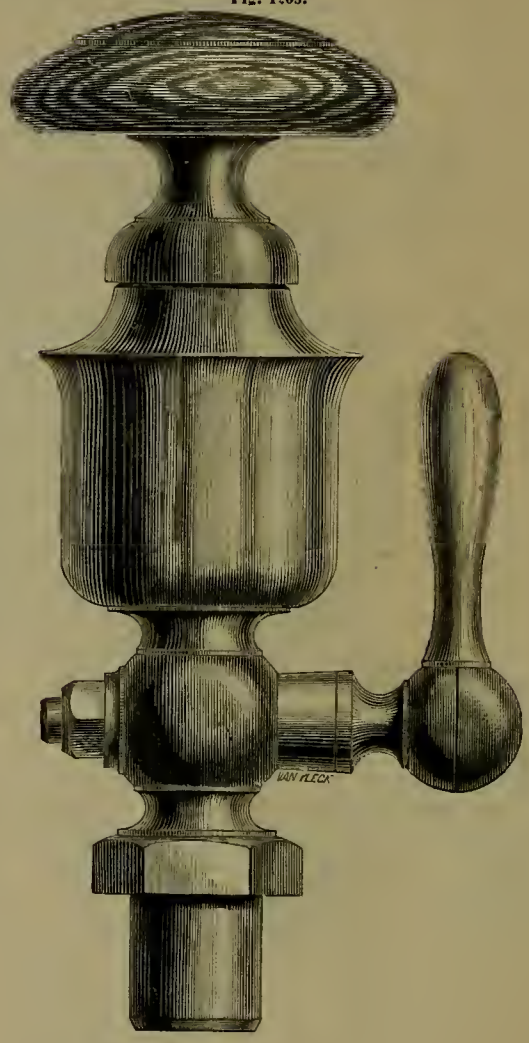
Diameter of Cup, $1\frac{1}{2}$ inches ....Cuts to $\frac{3}{8}$ inch Iron Pipe.

All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

LUBRICATOR.

Wood Top, Lever Handle, Steam Metal.

Fig. 1205.



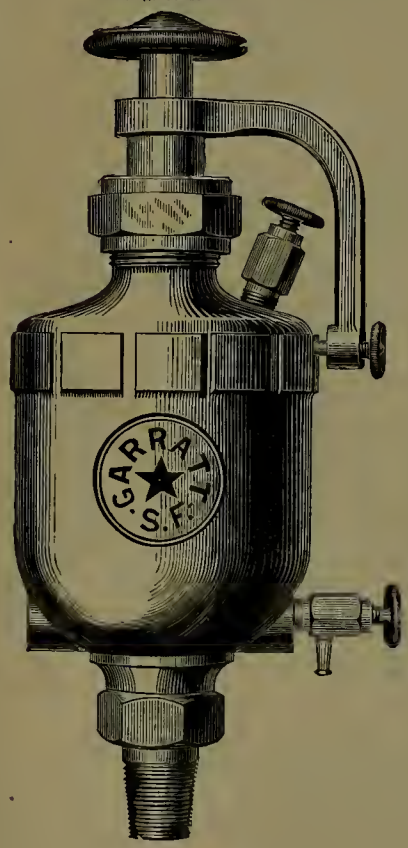
Diameter of Bowl, 2½ inches..... Cuts to ½ inch Iron Pipe.

All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

Garratt's Locomotive Cylinder Lubricator.

Brass or Iron.

Fig. 1206.

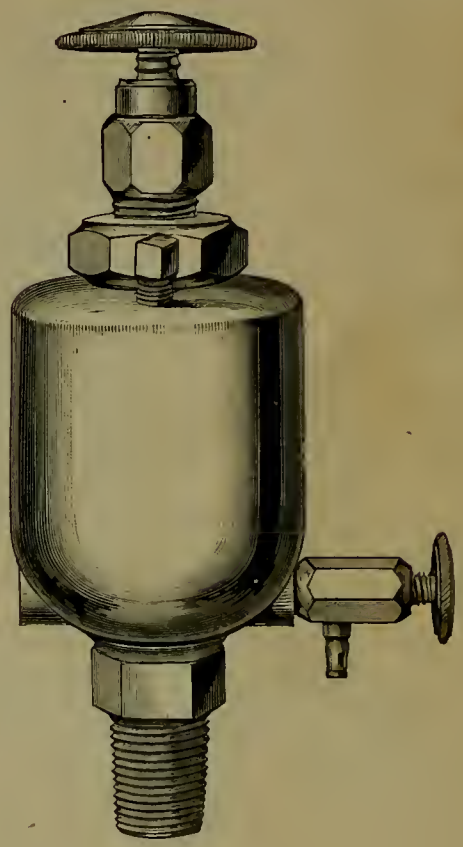


Capacity	½ pint.
"	1 pint.
"	1 quart.

All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

Reese Patent Locomotive Cylinder Lubricator.

Fig. 1207.



Capacity	½ pint.
"	1 pint.
"	1 quart.

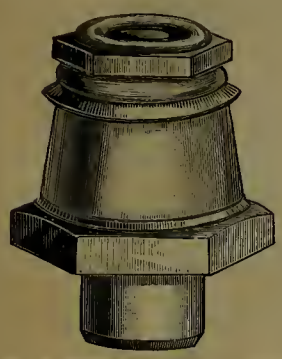
All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

Locomotive Oil Cups.

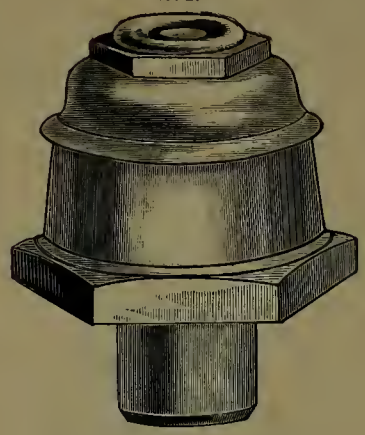
With Valve.

Fig. 1208.

No. 1.



No. 2.



Locomotive Oil Cups.

Plain.

Fig. 1209.

Fig. 1210.

Fig. 1211.

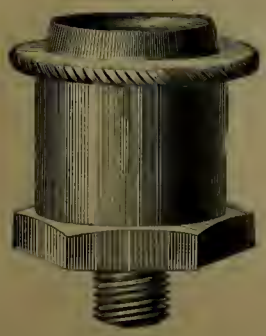
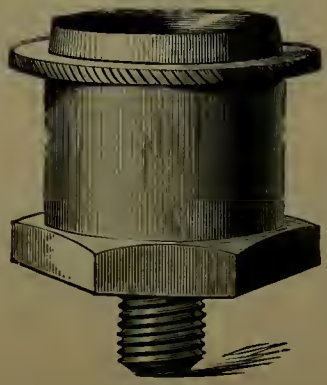


Fig. 1212.

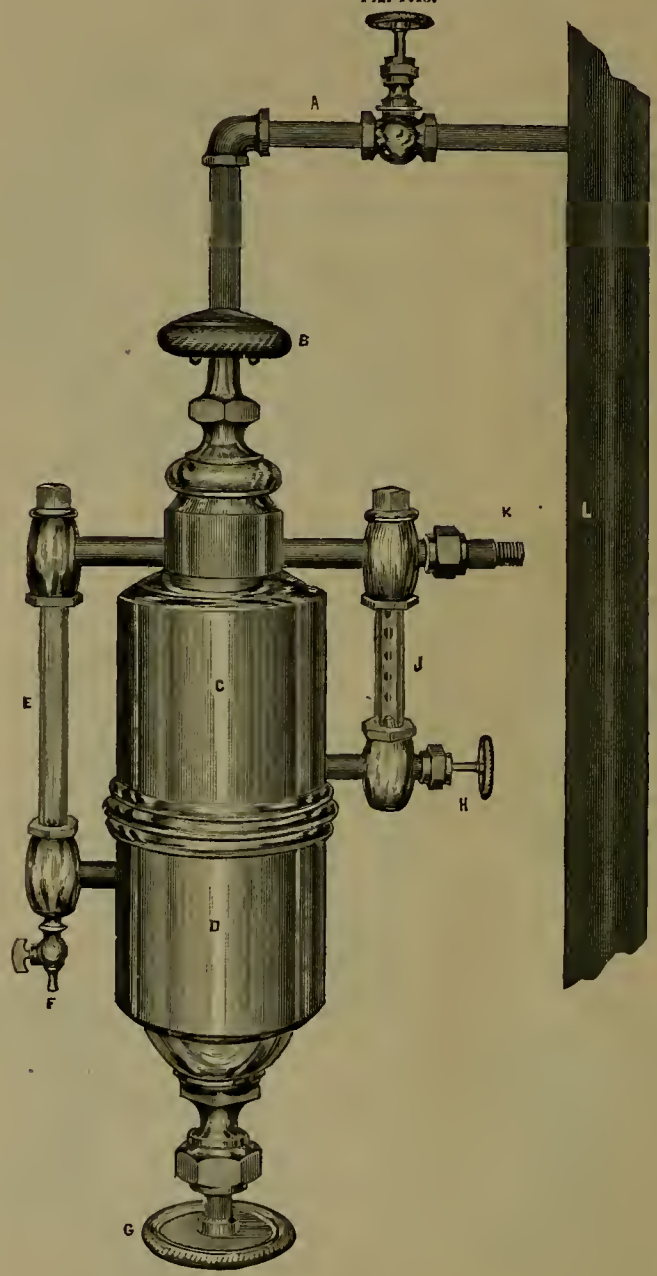


All Oil Cups will be furnished with Blank Shanks, unless ordered Threaded.

GATES' IMPROVED PATENT DROP LUBRICATOR.

Plain or Nickel Plated.

Fig. 1213.



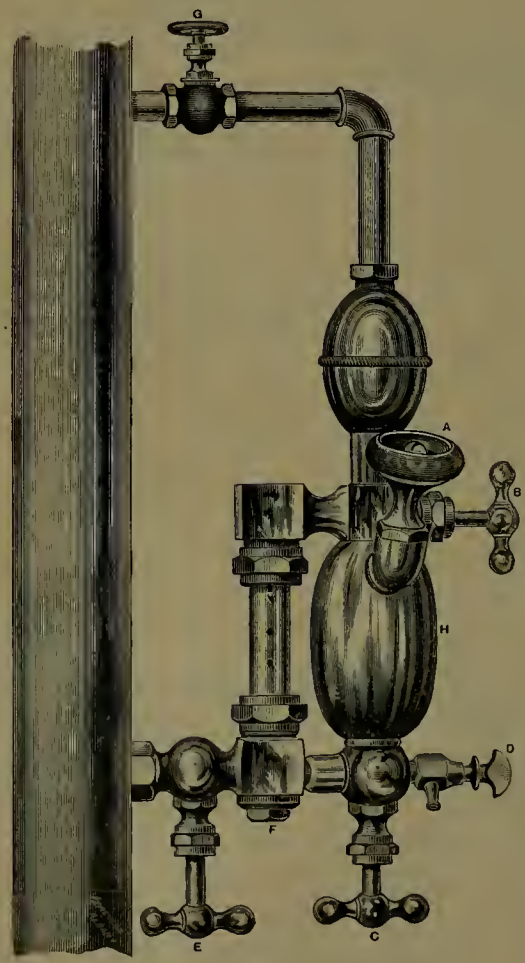
Capacity	½ pint.
"	1 pint.
"	1 quart.
"	½ gallon.

All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

HOLLAND'S PATENT DROP LUBRICATOR.

Plain or Nickel Plated.

Fig. 1214.

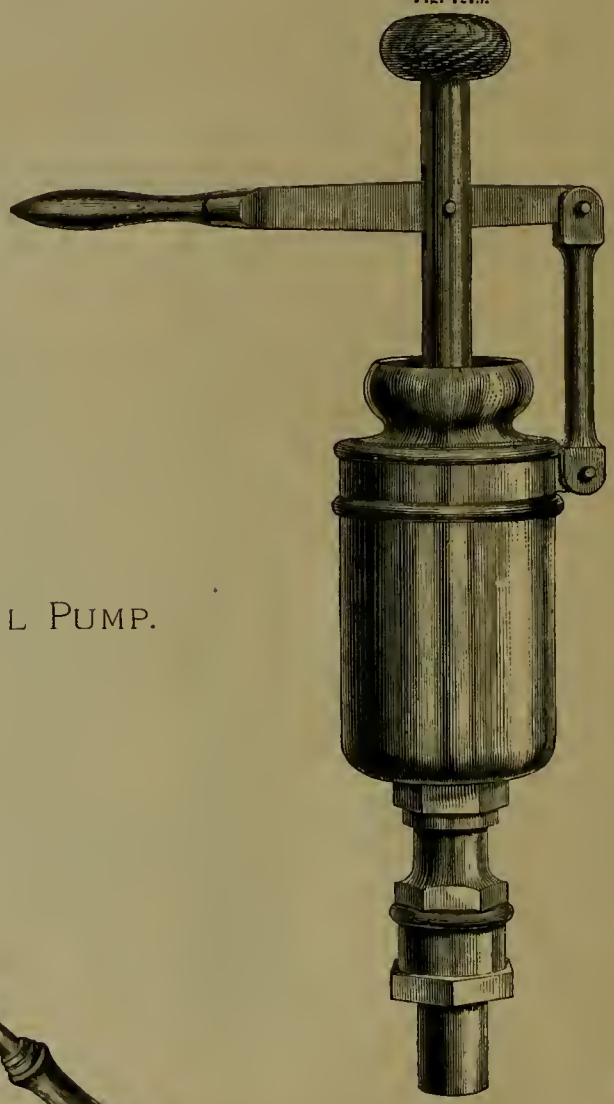


Capacity	½ pint
"	1 pint.
"	1 quart.

All Lubricators will be furnished with Blank Shanks, unless ordered Threaded.

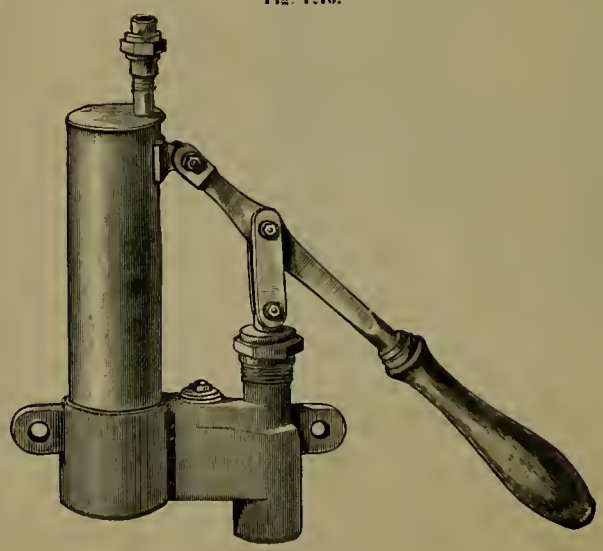
Garratt's Improved Lever Handle Oil Pump.

Fig. 1215.



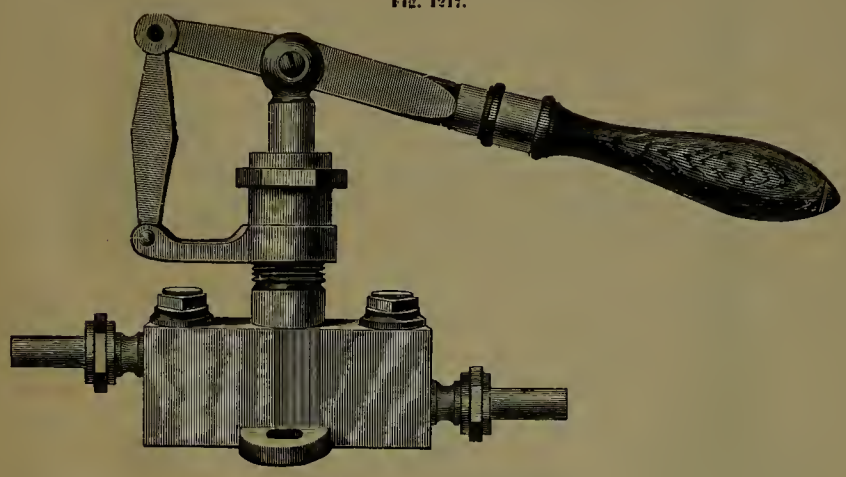
Cox's Patent Oil Pump.

Fig. 1216.



Oil Pumps.

Fig. 1217.



No. 1. No. 2.

With or without Cup.

Fig. 1218.

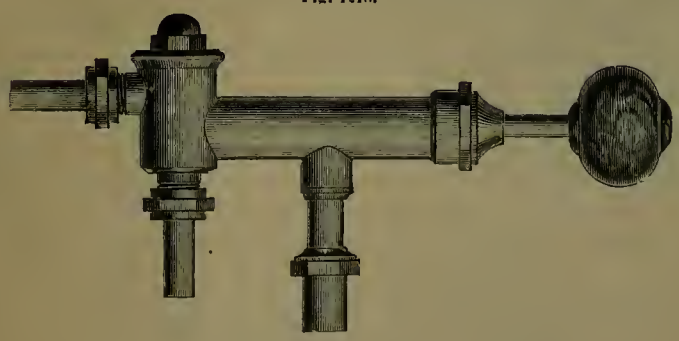
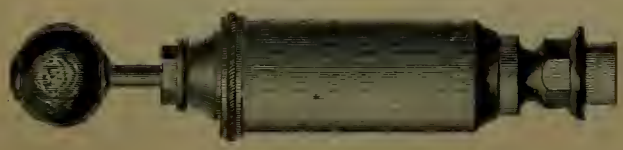


Fig. 1219.



Locomotive Oil Can.

With Valve.

Fig. 1220.

No. 1 ..... 1 pint.
No. 2 ..... 2 "
No. 3 ..... 3 "

Malleable Iron Oiler.

Fig. 1221.

No. 1. No. 2.

Fancy Oiler.

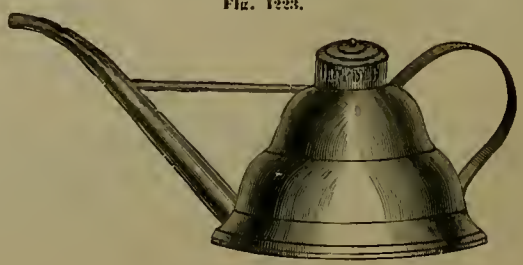
Spring Bottom.

Fig. 1222.

Brass or Copper.
Nos. 0, 1, 2, 3, 4, 5, 6.

Fancy Oil Can for Engineers.

Fig. 1223.



No. 1 ..... 1 pint. Short tube.
No. 2 ..... 1 " Long "
No. 3 ..... 1 quart. Short tube.
No 4 ..... 1 " Long "

Oiler Sets for Engine Room.

Fig. 1224.

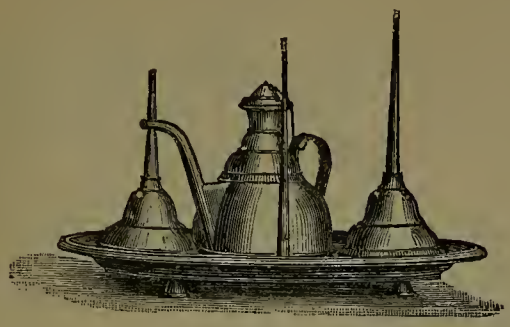


Fig. 1225.

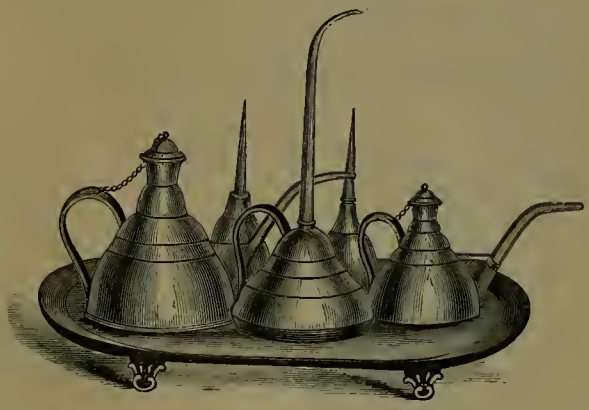


Fig. 1226.

Sets in plain brass or nickel plated.

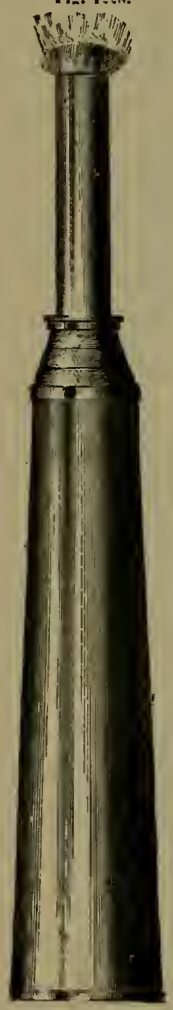
Tallow Cans for Engine Room.

Fig. 1227.

Brass or Copper.....	1	2	3 Quarts.
Tin	1	2	3 Quarts.

Locomotive Torches.

Fig. 1228.



Brass or Tin.

Engineers Hand Lamps.

Fig. 1229.

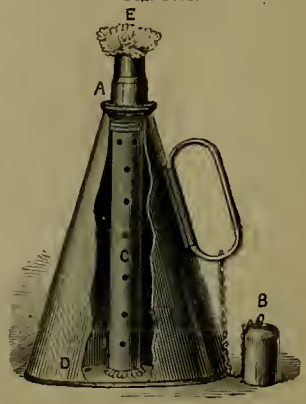
Brass or Tin.

Fig. 1230.

Malleable Iron.

Plumbers' Torches.

Fig. 1231.



Brass or Tin.

GONGS.

Fig. 1232.

Size....	4	6	8	10	12	13	14	15	16	18 Inches.

GONG PULLS.

Fig. 1233.

No. 1.

No. 2.

No. 3.

Jingle Bells.

Fig. 1234.

Fig. 1235.

Size ..... 3 $3\frac{1}{2}$ 4 5 6 Inches.

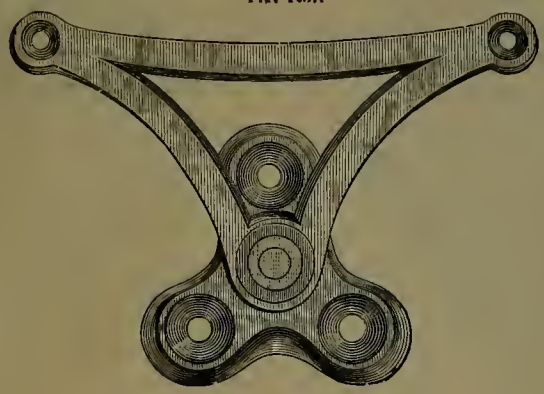
Bell or Gong Springs.

Fig. 1236.

Bell Crank.

SIDE.

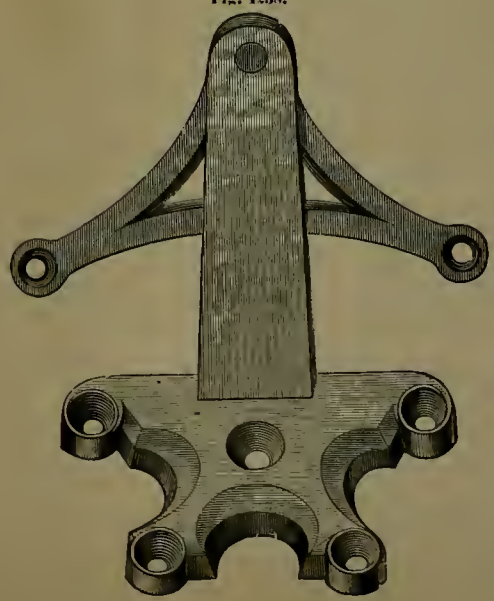
Fig. 1237.



Two Sizes..... Single Crank. Two Sizes..... Double Crank.

Bell Crank Stand.

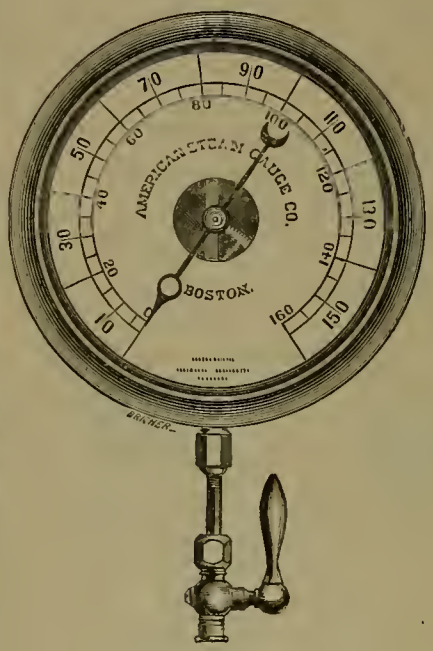
Fig. 1238.



Two Sizes..... Single Crank. Two Sizes..... Double Crank.

Original Bourdon Pressure and Vacuum Gauge.

Fig. 1239.



Outside View.

Inside View.

No. 000.	Brass	Case,	12	inch dial,	14½	inch over all,	Engraved.			
" 00.	"	"	10	"	12	"	"	"		
" 0.	"	"	9	"	11	"	"	"		
" 0.	"	"	9	"	11	"	"	Plain.		
" 1.	"	"	8½	"	10½	"	"	Engraved.		
" 1.	"	"	8½	"	10½	"	"	Plain.		
" 2.	"	"	6¾	"	8	"	"	High or Low Pressure or Vacuum.		
" 2.	Iron	"	6¾	"	8	"	"	"	"	"
" 4.	Brass	"	6	"	7¼	"	"	"	"	"
" 4.	Iron	"	6	"	7¼	"	"	"	"	"
" 5.	Brass	"	5½	"	6½	"	"	"	"	"
" 5.	Iron	"	5½	"	6½	"	"	"	"	"
" 6.	Brass	"	5	"	6	"	"	"	"	"
" 6.	Iron	"	5	"	6	"	"	"	"	"
" 7.	Brass	"	4½	"	5	"	"	"	"	"
" 7.	Iron	"	4½	"	5	"	"	"	"	"
" 8	Brass	"	3½	"	4½	"	"	"	"	"
" 8.	Iron	"	3½	"	4½	"	"	"	"	"
" 9.	Brass	"	2½	"	3	"	"	"	"	"
" 9.	Iron	"	2½	"	3	"	"	"	"	"

These Gauges have never before reached such a degree of perfection as at present with our recent improvements in the Spring. They are graduated to any desired pressure, not exceeding 300 pounds, and are warranted correct.

A Syphon filled with water should always be used in connecting the Gauge.

LANE'S IMPOVED GAUGE.

Fig. 1240.

Outside View.

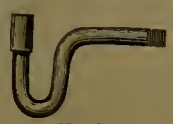
Inside View.

No.	000.	Brass	Case,	12	inch dial,	14½	over all,	Engraved.		
"	00	"	"	10	"	12¼	"	"		
"	0.	"	"	9	"	11	"	"		
"	0.	"	"	9	"	11	"	Plain.		
"	1.	"	"	8½	"	10½	"	Engraved.		
"	1.	"	"	8½	"	10½	"	Plain.		
"	2.	"	"	6¾	"	8	"	Locomotive,	Steamboat	or Stationary.
"	2.	Iron	"	6¾	"	8	"	"	"	"
"	4.	Brass	"	6	"	7¼	"	"	"	"
"	4.	Iron	"	6	"	7¼	"	"	"	"
"	5.	Brass	"	5½	"	6½	"	"	"	"
"	5.	Iron	"	5½	"	6½	"	"	"	"
"	6.	Brass	"	5	"	6	"	"	"	"
"	6.	Iron	"	5	"	6	"	"	"	"
"	7.	Brass	"	4¼	"	5	"	"	"	"
"	7.	Iron	"	4¼	"	5	"	"	"	"

N B.—All our Gauges are graduated by the open mercury columu, and are warranted to be correct.

STEAM GAUGE SYPHONS.

Fig. 1241.

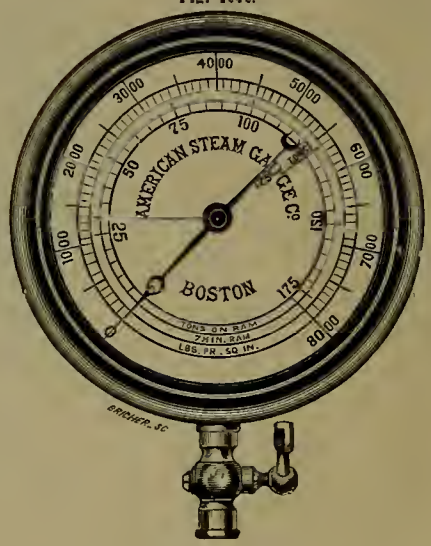


No. 1.

No. 2.

Hydraulic Gauge.

Fig. 1242.



12	inch dial,	brass	case,	from	2,000 to 20,000	pounds.
10	"	iron	"	"	2,000 to 20,000	"
9	"	brass	"	"	2,000 to 16,000	"
$8\frac{1}{2}$	"	"	"	"	2,000 to 16,000	"
$8\frac{1}{2}$	"	iron	"	"	2,000 to 16,000	"
$6\frac{3}{4}$	"	brass	"	"	2,000 to 10,000	"
$6\frac{3}{4}$	"	iron	"	"	2,000 to 10,000	"
6	"	brass	"	"	1,000 to 6,000	"
6	"	iron	"	"	1,000 to 6,000	"
$6\frac{3}{4}$	"	brass	"	"	500	"

The Spring is of the Bourdon style, made of heavy steel, and as there is a motion of only $\frac{3}{16}$ of an inch to send the hand around the dial, the danger of setting it is entirely obviated. It makes the best Hydraulic Gauge in the market. They are in use in all the principle railroad shops.

Combination Gauge.

Fig. 1243.

Dial, 12 10 9 8½ 6¾ Inches.

We would call particular attention to above Combination Gauge for indicating the height of water in a reservoir or stand-pipe, also the pressure per square inch.

They are graduated by the Mercury Column, and are very sensitive

To raise a column of mercury 2.04 inches requires one pound pressure—equal to 27.67 inches of water.

N. B.—In ordering always state the maximum height of water.

Revolution Counters.

Fig. 1244.

12-inch Counter	8 Discs.
10 " "	8 "
9 " "	8 "
8½ " "	8 "
12 " "	6 "
10 " "	6 "
9 " "	6 "
8½ " "	6 "
6¾ " "	6 "

Engine Registers

Fig. 1245.

Seven Discs.

Fig. 1246.

Five Discs.

Marine Clocks.

Howard or Seth Thomas Movements.

Fig. 1247.

12-inch dial	Howard Movement		8 day clock.
10 " "	"	"	" "
9 " "	"	"	" "
8½ " "	"	"	" "
12 " "	Seth Thomas	"	" "
10 " "	"	"	" "
9 " "	"	"	" "
8½ " "	"	"	" "
6¾ " "	"	"	30-hour "
6 " "	"	"	" "
5½ " "	"	"	" "

These Clocks are made with ring hinged to the case, and lock and key, finished in the highest manner.

Steam Ship Instruments.

Fig. 1248.

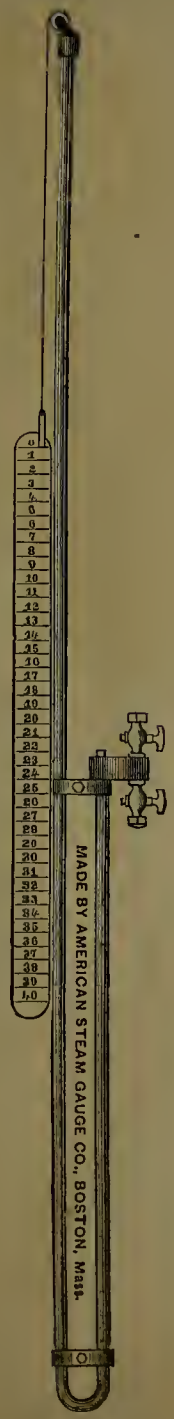
Black Walnut Frame with Three Instruments.

Fig. 1249.

Parties wishing a particular design can have the same made by us by sending drawings, dimensions and all particulars.

MERCURIAL SYPHON STEAM GAUGE.

Fig. 1250.



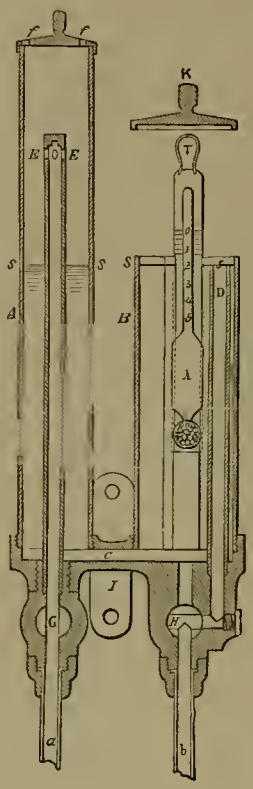
With Pulley or Stack, Mortised, Iron Tube, to 40 lbs. Pressure.

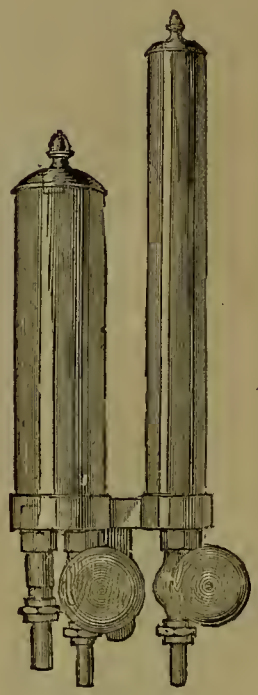
Fig. 1251.

With Glass Tube in Black Walnut Case, to 45 lbs. Pressure.

Salinometer Pots.

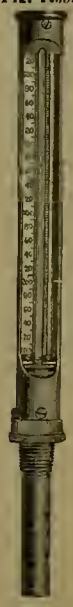
Fig. 1252.





Steam Pipe Thermometer.

Fig. 1255.



Hot Well Thermometer.

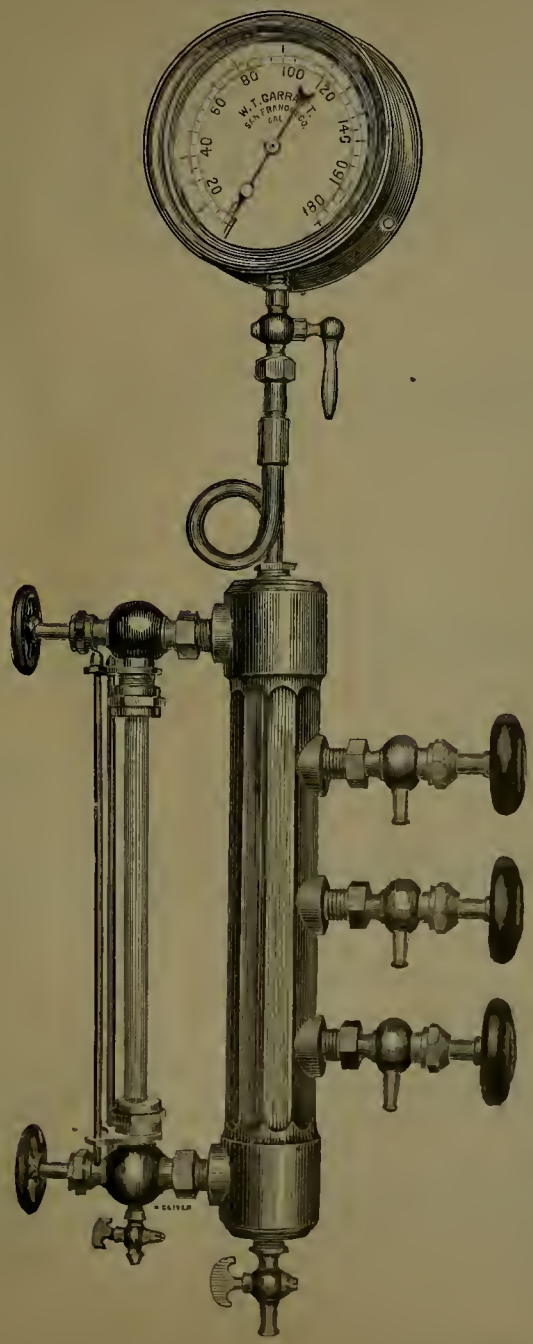
Fig. 1253.

Uptake Thermometer.

Fig. 1254.

Steam and Water Gauge Column.

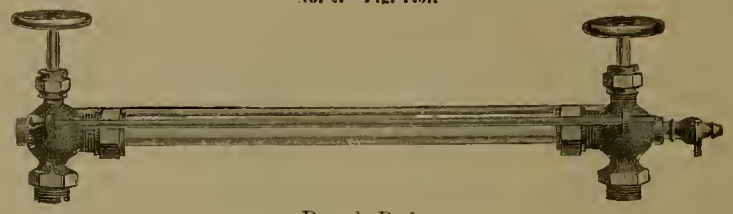
Fig. 1256.



Boiler Connections, ½ inch. 13½ inch Centres.

WATER GAUGES.

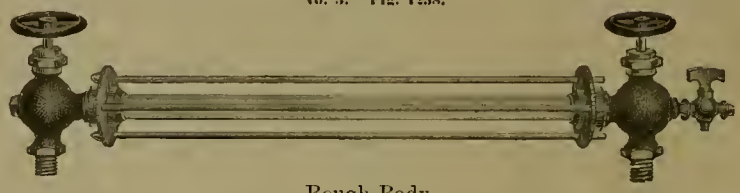
No. 2. Fig. 1257.



Rough Body.

Screwed for ½ inch Iron Pipe..... Glass, ⅝x12 inches.

No. 3. Fig. 1258.



Rough Body.

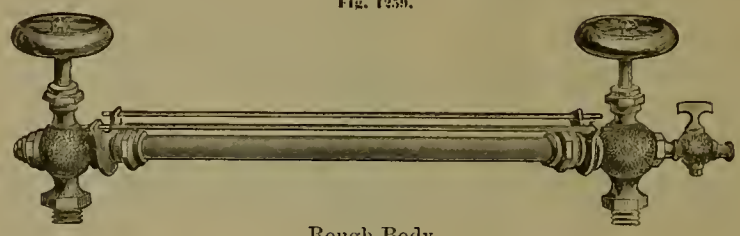
Screwed for ½ inch Iron Pipe..... ...Glass, ⅝x12 inches.

No. 4.

Rough Body.

Screwed for ½ inch Iron Pipe..... .. Glass, ⅝x12 inches.

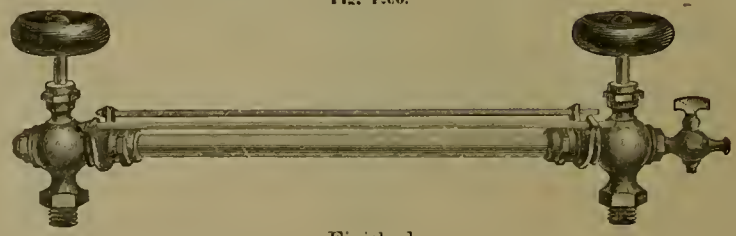
Fig. 1259.



Rough Body.

No. 5. Screwed for ½ inch Iron Pipe..... Glass, ⅝x14 inches.
No. 6. Screwed for ¾ inch Iron Pipe..... .. Glass, ¾x14 inches.

Fig. 1260.

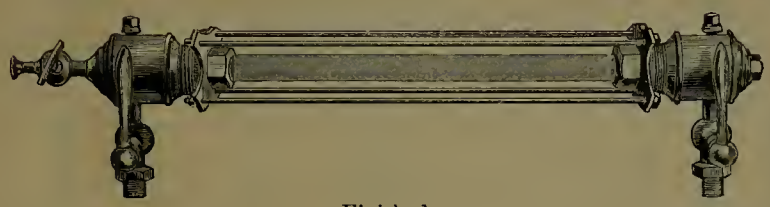


Finished.

No. 7. Screwed for ½ inch Iron Pipe..... .....Glass, ⅝x14 inches.
No. 8. Screwed for ¾ inch Iron Pipe.....Glass, ¾x14 inches.

WATER GAUGES.

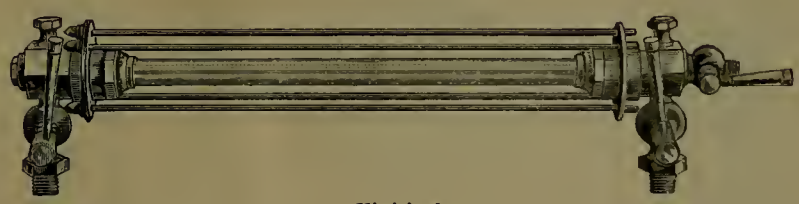
No. 9. Fig. 1261.



Finished.

Screwed for ½ inch Iron Pipe..... Glass, ⅝x12 inches.

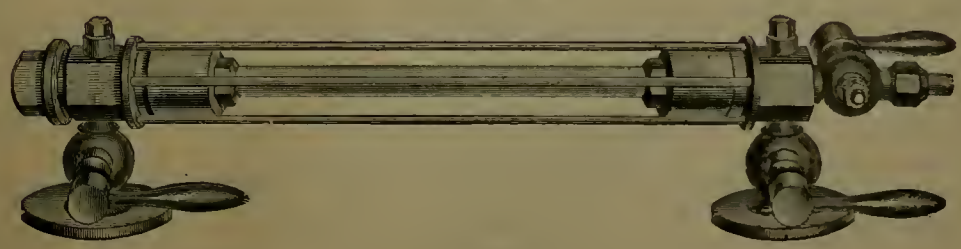
No. 10. Fig. 1262.



Finished.

Screwed for ½ inch Iron Pipe..... Glass, ⅝x14 inches.

No. 11. Fig. 1263.



Finished.

Flanged ..... Glass, ⅞x14 inches.

Locomotive Spring Balances.

Fig. 1264.

Inside Slide.

Fig. 1266.

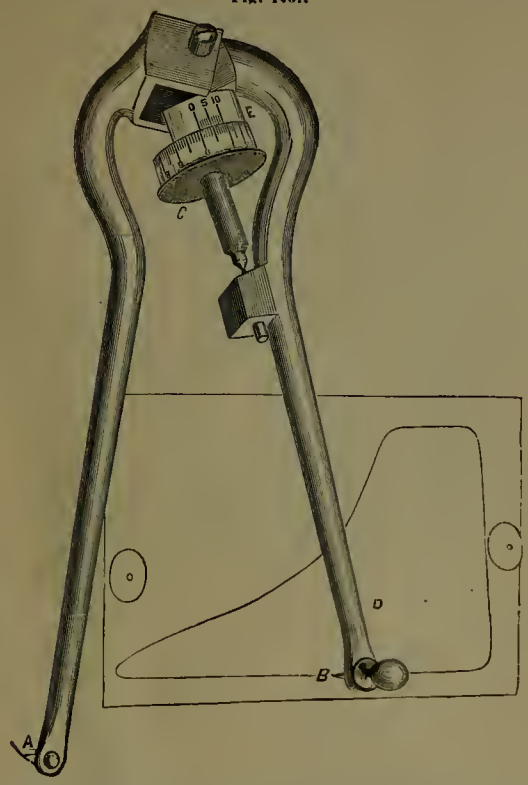
Straight, with Hook.

Fig. 1265.

Outside Slide.

Amsler's Polar Planimeter.

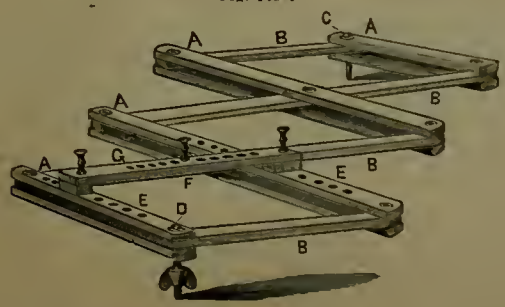
Fig. 1267.



This instrument is for measuring the area of Indicator Diagrams. By using this instrument the whole work of measuring a diagram can be done in one minute.

The Pantograph.

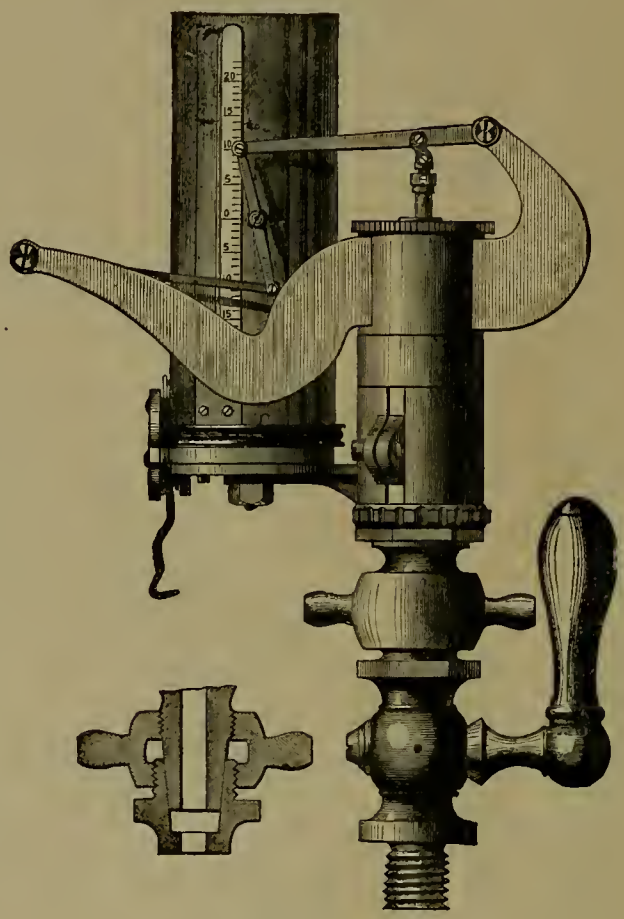
Fig. 1268.



This instrument is used as an accessory to the Indicator, known as the Pantograph or Drum Motion, or, as the English term it, Lazy-Tongs.

RICHARDS' IMPROVED STEAM ENGINE INDICATOR.

Fig. 1269.



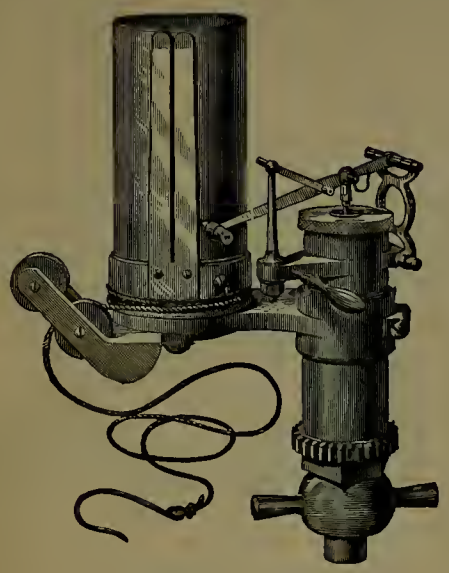
SPRINGS.

In order to adapt this Indicator for use on engines of every class, springs are made for it to ten different scales—

No. 1, $\frac{1}{8}$-inch motion, shows 1 lb. pressure on the square inch.	Indicates from	— 15 to +	10
" 2, $\frac{1}{12}$ " " " " " " "	" "	— 15 to +	22·5
" 3, $\frac{1}{16}$ " " " " " " "	" "	— 15 to +	35
" 4, $\frac{1}{20}$ " " " " " " "	" "	— 15 to +	47
" 5, $\frac{1}{24}$ " " " " " " "	" "	— 15 to +	60
" 6, $\frac{1}{30}$ " " " " " " "		Atmosphere to +	80
" 7, $\frac{1}{32}$ " " " " " " "		" " +	100
" 8, $\frac{1}{40}$ " " " " " " "		" " +	125
" 9, $\frac{1}{48}$ " " " " " " "		" " +	150
" 10, $\frac{1}{56}$ " " " " " " "		" " +	175

Thompson Patent Indicator.

Fig. 1270.



Three Way Indicator Cock.

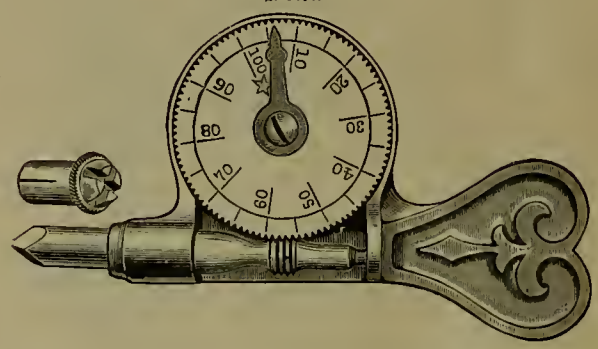
Fig. 1271.

No. 1. No. 2.

Improved Pocket Speedometer.

Full Size.

Fig. 1272.



To ascertain the number of revolutions of any shaft in a given time, place the point of the indicator in the centre of the shaft and for every hundred revolutions the dial will revolve once. Less than 100 will be indicated by the pointer, which is to be placed at 100 before starting.

Speed Indicator.

To Ascertain the Number of Revolutions made by a Shaft in any Given Time.

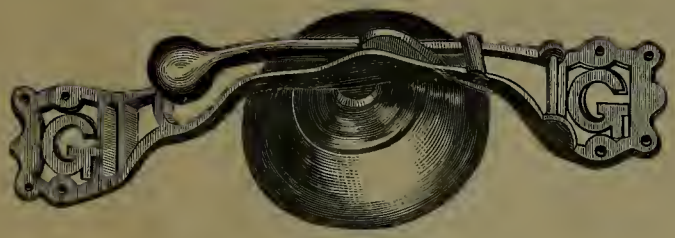
Fig. 1273.

To every hundred revolutions of the shaft the hundred pointer will make one revolution, while the thousand pointer will indicate one number. The dial being marked into ten parts, it may be applied to a shaft revolving either to the right or left.

Street Car Trimmings.

Signal Bell.

Fig. 1274.

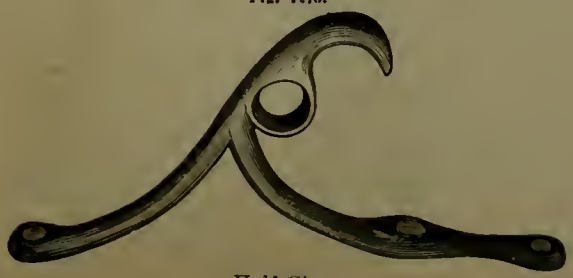


Harness Bell.

Fig. 1275.

Hand-rail Bracket.

Fig. 1276.



Half Size.

Street Car Trimmings.

Sash Lifts.

Fig. 1277.

Fig. 1278.

Sliding Door Sheaves.

Fig. 1279.

Street Car Trimmings.

Door Handle.

Fig. 1280.

Car Journal Bearings.

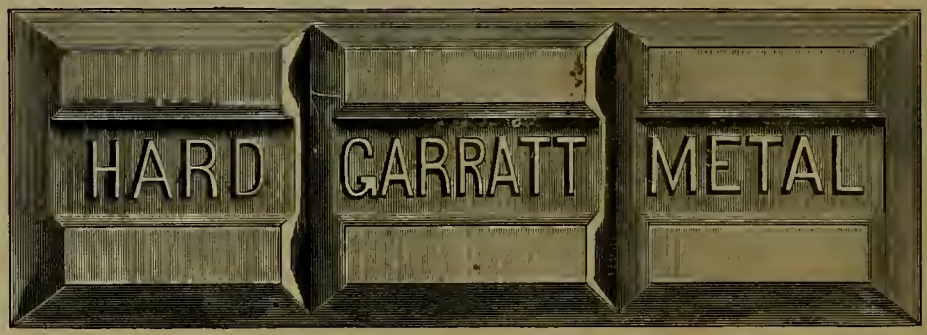
Fig. 1281.

METALS.

Fig. 1282.

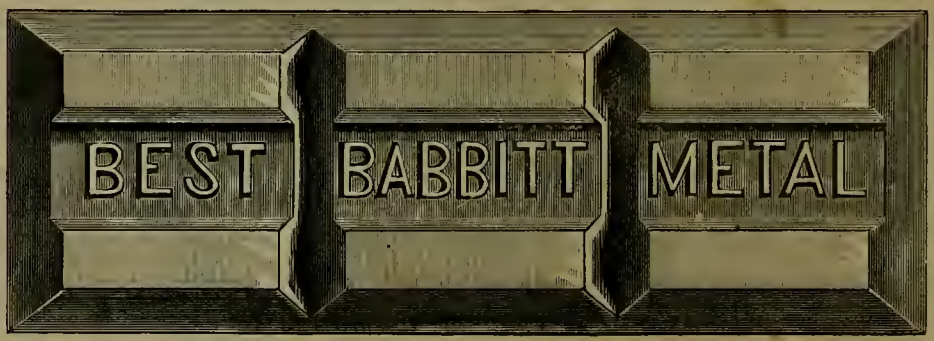
3-lb. Bars.

Fig. 1283.



3-lb. Bars.

Fig. 1284.



3-lb Bars.

Iron Pipe, Casing and Boiler Tubes.

Wrought Iron Pipe for Steam, Water and Gas.

Fig. 1285.

1¼ inch and below, Butt welded and proved to 300 lbs. per square inch, hydraulic pressure.
1½ inch and above, Lap " " 500 " " " "

Black or Galvanized.

Size, inside diameter	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½
Weight, per foot	.24	.42	.56	.85	1.12	1.67	2.25	2.69	3.66	5.77	7 54	9.05	10.72	12.49
Threads to inch of Screw	27	18	18	14	14	11½	11½	11½	11½	8	8	8	8	8

Size, inside diameter	5	6	7	8	9	10	11	12	13	14
Weight, per foot	14.56	18.77	23.41	28.35	34.01	40.64	47.73	54.65	61.94	70.01
Threads to inch of Screw	8	8	8	8	8	8	8	8	8	8

Lap Welded Light Wrought Iron Pipe or Casing—with Screws and Sockets.

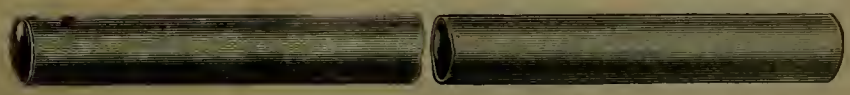
Fig. 1286.

Actual outside diameter	1¾	2¼	2½	2¾	3	3¼	3½	3¾	4	4¼	4½
Nominal inches inside	1½	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4¼
Weight, per foot	1.66	2.23	2.75	3.04	3.33	3.95	4.27	4 59	5.32	5.50	6.01

Actual outside diameter	4¾	5	5¼	5½	6	6⅝	7	8	8⅝
Nominal inches inside	4½	4¾	5	5 3/16	5⅝	6¼	6⅝	7⅝	8¼
Weight, per foot	6.65	7.22	7.66	8.08	9.34	10.06	12.43	15.10	16.15

Lap Welded Boiler Tubes.

Fig. 1287.



Outside diameter, inches	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4½
Weight, per foot	.71	.90	1.25	1.67	1.98	2 24	2.76	3.05	3.33	3 96	4 27	4.59	5 32	6 01
Thickness wire gauge	.15	.15	.14	.13	.13	.13	.12	.12	12	.11	.11	.11	.10	.10

Outside diameter, inches	5	6	7	8	9	10	11	12	13	14
Weight per foot	7.23	9.35	12.44	15.11	18.00	22.19	25.49	28.51	32.21	36 27
Thickness wire gauge	.09	.8	.8	.8	.7½	.6½	.5	.4½	.4	.3½

In ordering Steam, Water aud Gas Pipe, give inside diameter. Light or Casing Pipe and Boiler Tubes, outside diameter.

Malleable Iron Pipe Fittings.

All Sizes.

FOR STEAM, WATER AND GAS.

Elbows.

Fig. 1288.

Reducing Elbows.

Fig. 1289.

Tees.

Fig. 1290.

Crosses.

Fig. 1291.

Return Bends.

OPEN PATTERN.

Fig. 1292.

Return Bends.

CLOSE PATTERN.

Caps.

Fig. 1293.

Plain Couplings.

Fig. 1294.

Reducing Couplings.

Fig. 1295.

Street Elbows.

Fig. 1296.

Male and Female Screw.

Shoulder Nipples.

Running Nipples.

Fig. 1297.

Union Couplings.

Fig. 1298.

Plugs.

Fig. 1299.

Bushings.

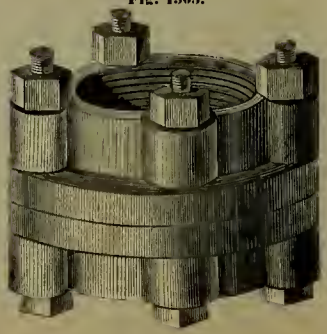
Fig. 1300.

Lock Nuts.

Fig. 1301.

Flange Unions.

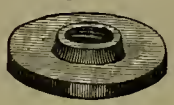
Fig. 1303.



Including Bolts and Nuts.

Plain Flanges.

Fig. 1302.



Railing Flanges.

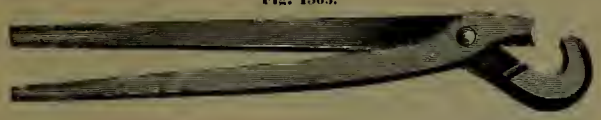
Fig. 1304.

Sizes. . $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 In.

Pipe Tools.

Plain Pipe Tongs.

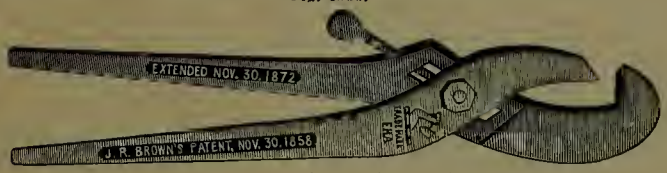
Fig. 1305.



Size	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4 Inches.

Brown's Patent Extension Pipe Tongs.

Fig. 1306.



Nos. 1 $1\frac{1}{2}$ 2 3 4 5.

No. 1.	Takes Pipes..... $\frac{1}{8}$ to $\frac{3}{4}$ inch.	No. 3.	Takes Pipe..... ...1 to $2\frac{1}{2}$ Inches.
" $1\frac{1}{2}$.	" " .....$\frac{1}{8}$ to 1 "	" 4.	" " ....$1\frac{1}{4}$ to 3 "
" 2.	" " ....$\frac{1}{4}$ to $1\frac{1}{4}$ "	" 5.	" " ... .$2\frac{1}{2}$ to 4 "

Brock's Patent Chain Wrench.

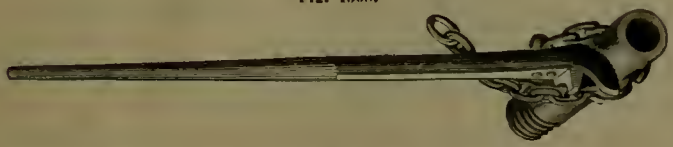
Fig. 1307.

Nos. 1 2 3 4.

No. 1.	Takes Pipe. ... .. $\frac{1}{8}$ to 2 Inches.	No. 3.	Takes Pipe. .....$\frac{1}{2}$ to 4 Inches.
" 2.	" " ....$\frac{1}{4}$ to 3 "	" 4.	" " ....1 to 5 "

Robbins' Patent Pipe Wrench.

Fig. 1308.

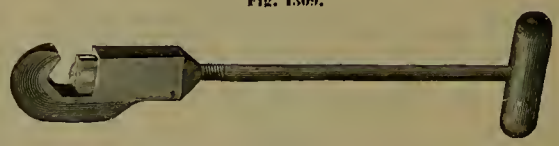


SIZES.	LENGTH OF LEVER.	SIZE OF LEVER NEAR CLAW.	DIAMETER OF CHAIN.	AVERAGE WEIGHT.	SIZES OF PIPE ADAPTED TO
2	27 inches	$1\frac{1}{8}$ inches	$\frac{1}{4}$ inch	7 lbs	1 inch to 2 inches
3	3 feet	$1\frac{1}{4}$ "	$\frac{5}{16}$ "	12 "	$1\frac{1}{4}$ " 4 "
4	4 "	$1\frac{1}{2}$ "	$\frac{3}{8}$ "	24 "	2 " 6 "
5	5 "	$1\frac{3}{4}$ "	$\frac{1}{2}$ "	36 "	$2\frac{1}{2}$ " 8 "
6	6 "	2 "	$\frac{5}{8}$ "	50 "	4 " 10 "
7	7 "	$2\frac{1}{2}$ "	$\frac{3}{4}$ "	100 "	4 " 12 "

Pipe and Tube Cutters.

National Steel Pipe Cutter.

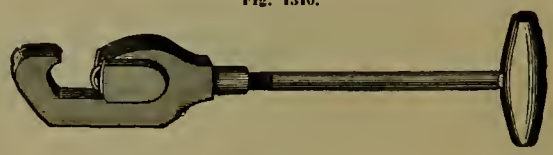
Fig. 1309.



No. 1. Cuts Pipe $\frac{1}{8}$ to $\frac{3}{4}$ in. No. 2. Cuts Pipe 1 to 2 in. No. 3. Cuts Pipe 2 to 3 in.

Stanwood Pipe Cutter.

Fig. 1310.



No. 1. Cuts Pipe $\frac{1}{8}$ to $\frac{3}{4}$ in. No. 2. Cuts Pipe 1 to 2 in. No. 3. Cuts Pipe 2 to 3 in.

Cutter Wheel.

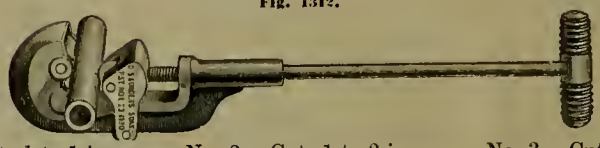
For Stanwood or National Cutters.

Fig. 1311.

No. 1. No. 2. No. 3.

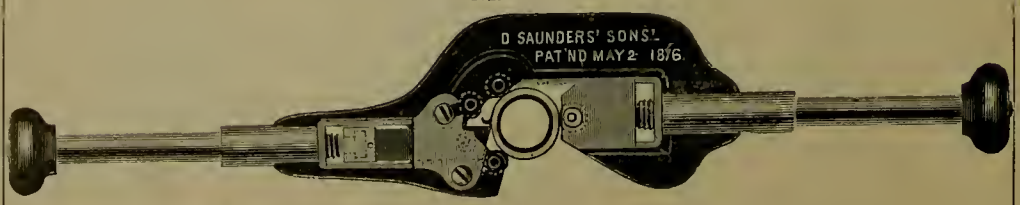
Wheel, Pipe and Tube Cutters.

Fig. 1312.



No. 1. Cuts $\frac{1}{8}$ to 1 in. No. 2. Cuts 1 to 2 in. No. 3. Cuts 2 to 3 in.

Fig. 1313.



No. 1. Cuts $\frac{1}{8}$ to 1 in. No. 2. Cuts 1 to 2 in. No. 3. Cuts 2 to 3 in.

IMPROVED DIE STOCKS.

FOR THREADING STEAM, WATER AND GAS PIPE.

With Loose Handles and Solid Dies.

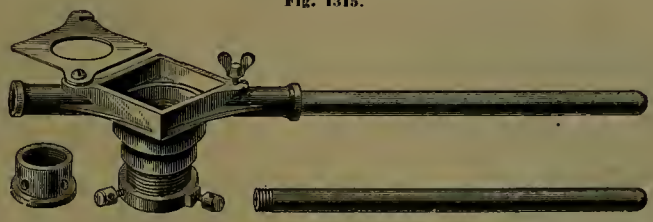
Fig. 1314.

No. 1½.

Dies 2½ inches square by ¾ inch..... .....To cut ¼, ⅜, ½, ¾ and 1 inch Pipe.

With Leader Screw.

Fig. 1315.

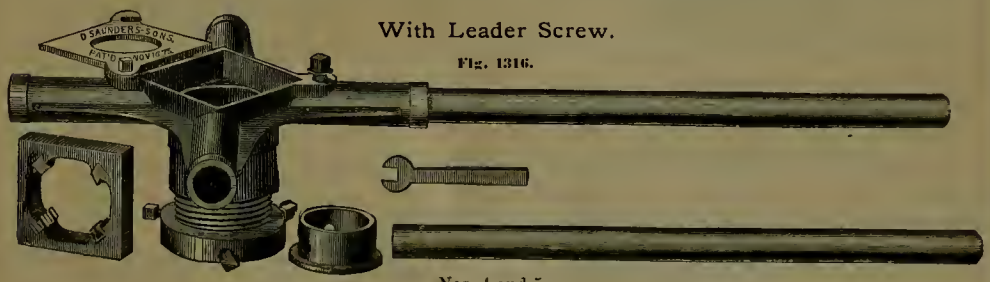


No. 3.

Dies 4 inches square by ⅞ inch.. ....To cut 1¼, 1½ and 2 inch Pipe.

With Leader Screw.

Fig. 1316.



Nos. 4 and 5.

No. 4 threads 2½ and 3 inch Pipe. No. 5 threads 2½, 3, 3½ and 4 inch Pipe.

Combination Screwing Stock, with Loose Dies.

Fig. 1317.

No. 0.

Fig. 1318.

No. 00.

No. 0	Cuts ¼	¼	⅜	½	inch Pipe.	No. 0	Extra Dies, right or left, each.
No. 00	Cuts ½	¾	1		inch Pipe.	No. 00	Extra Dies, right or left, each.

Pipe Vises.

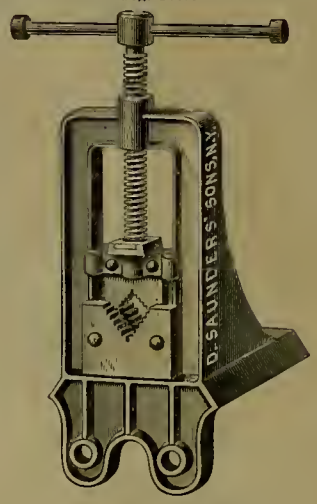
Malleable Pipe Vise.

Fig. 1319.

No. 1. Holds $\frac{1}{8}$ to 2 inches.

Angle Plate Pipe Vise.

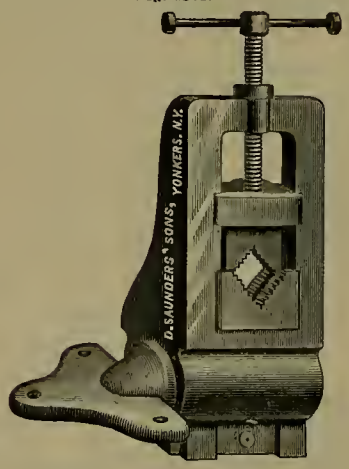
Fig. 1320.



No. 2. Holds $\frac{1}{4}$ to 2 inches.

Improved Pipe Vise.

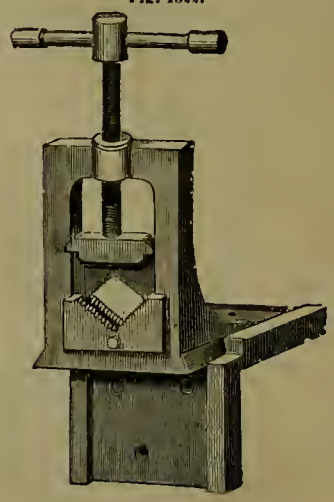
Fig. 1321.



No. 1. Holds $\frac{1}{8}$ to 2 inches.
" 2. " $\frac{1}{8}$ to 3 "
" 3. " $\frac{1}{4}$ to 4 "

Vise with Angle Plate.

Fig. 1322.

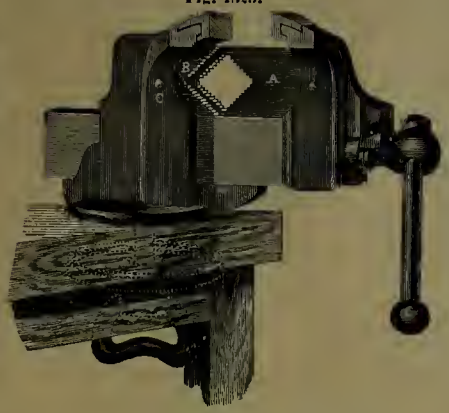


No. 1. Holds $\frac{1}{8}$ to 2 inches.
" 2. " $\frac{1}{4}$ to 3 "
" 3. " $\frac{1}{2}$ to 4 "

Vises, Taps, Reamers, Plyers and Hooks.

Patent Combination Vise.

Fig. 1323.



No. 1. Holds $\frac{1}{8}$ to 2 inch Pipe.
No. 2. Holds $\frac{1}{4}$ to 3 inch Pipe.

Taps.

Fig. 1324.

Reamers.

Fig. 1325.

Size $\frac{1}{8}$ $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 in.

Gas and Burner Plyers.

Fig. 1326.

Size . . . . . 5 6 7 8 9 10 11 12 13 14 Inches.

Pipe Hooks.

Fig. 1327.

Size $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 in.

Pipe Strap.

Fig. 1328.

Tinned.

Size $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 in.

Waste Nut.

Fig. 1329.

Size $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 in.

Plumbers' Force Pumps.

Fig. 1331.

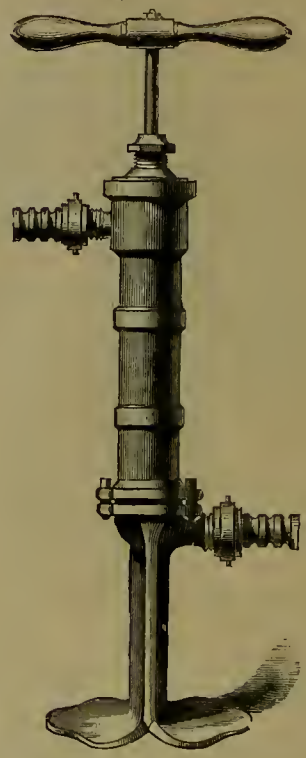
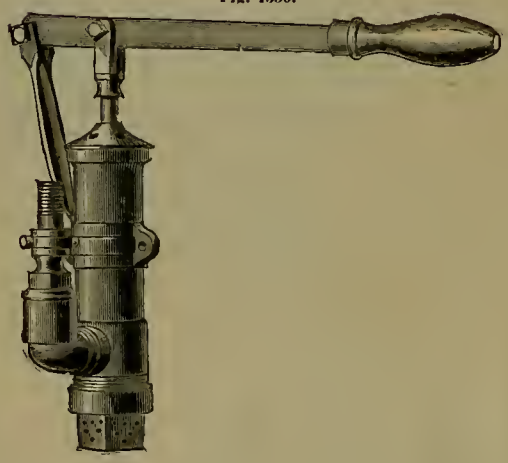


Fig. 1330.



Alcohol Cup.

Fig. 1332.

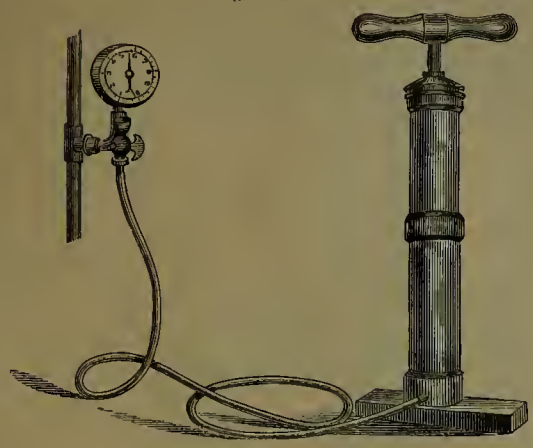
Ether Cup.

Fig. 1333.

Gas Proving Pump.

With Air Gauge.

Fig. 1334.



Air Pump.

Fig. 1335.

Gas Proving Pump.

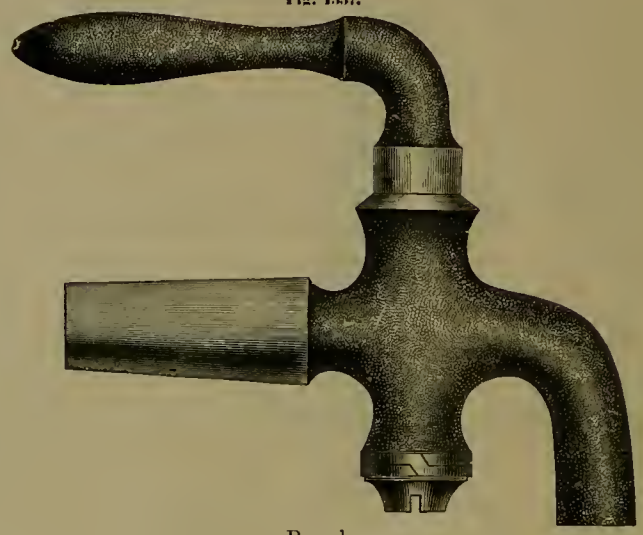
With Mercury Column.

Fig. 1336.

Plain Bibbs.

For Lead Pipe.

Fig. 1337.

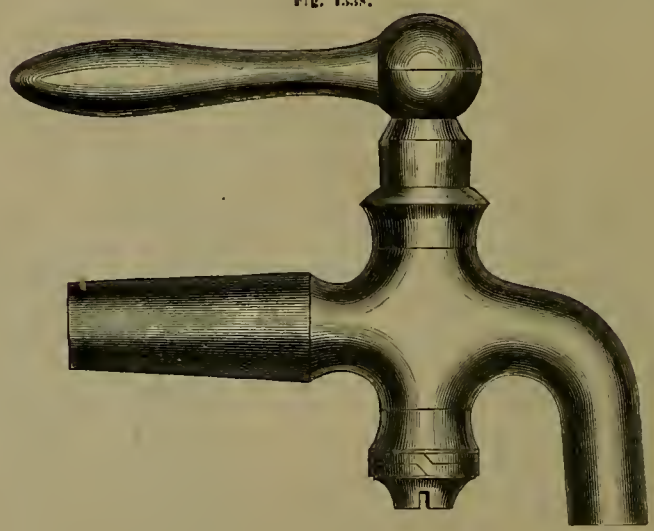


Rough.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 $2\frac{1}{4}$ $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 Inches.

For Lead Pipe.

Fig. 1338.



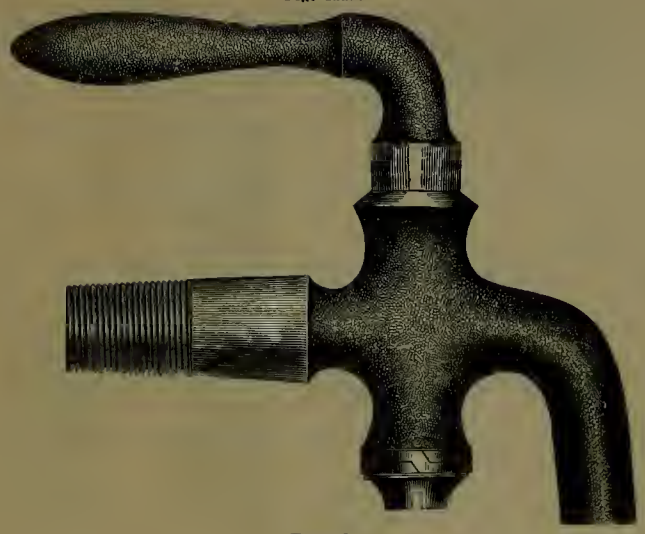
Finished.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 $2\frac{1}{4}$ $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 Inches.

Plain Bibbs.

Screwed for Iron Pipe, without Shoulder.

Fig. 1339.

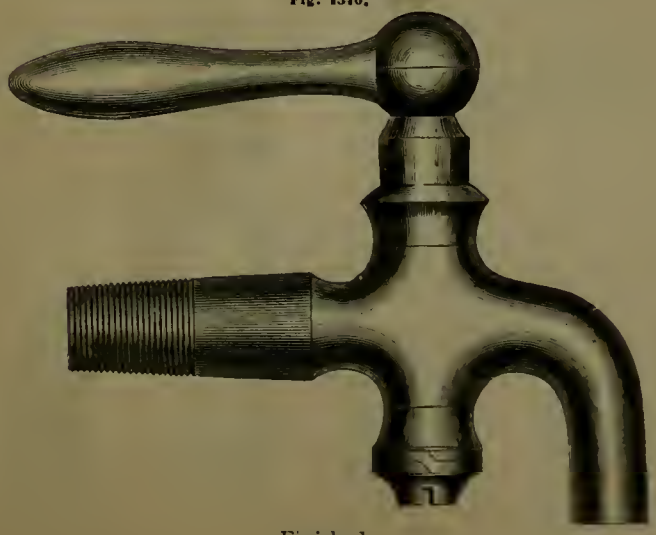


Rough.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Screwed for Iron Pipe, without Shoulder.

Fig. 1340.



Finished.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Plain Bibbs.

Screwed for Iron Pipe, with Shoulder.

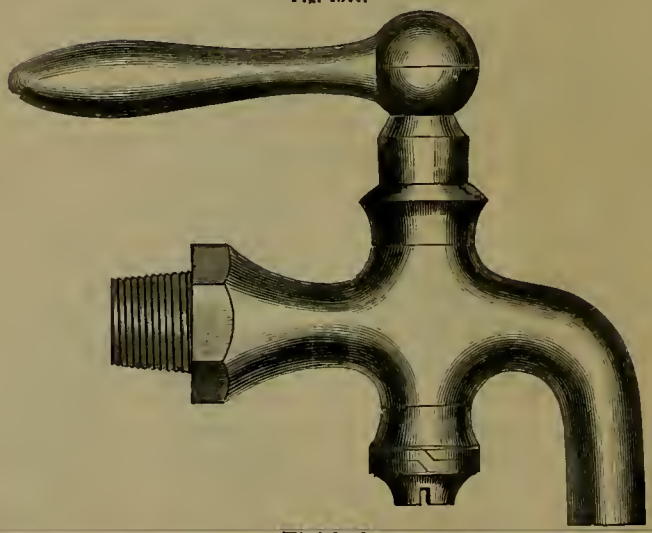
Fig. 1341.

Rough.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Screwed for Iron Pipe, with Shoulder.

Fig. 1342.



Finished.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Plain Bibbs.

Screwed for Wood.

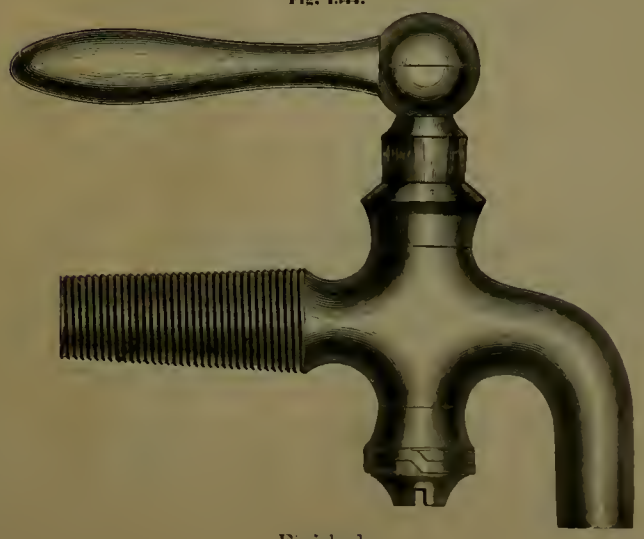
Fig. 1343.

Rough.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 Inches.

Screwed for Wood.

Fig. 1344.



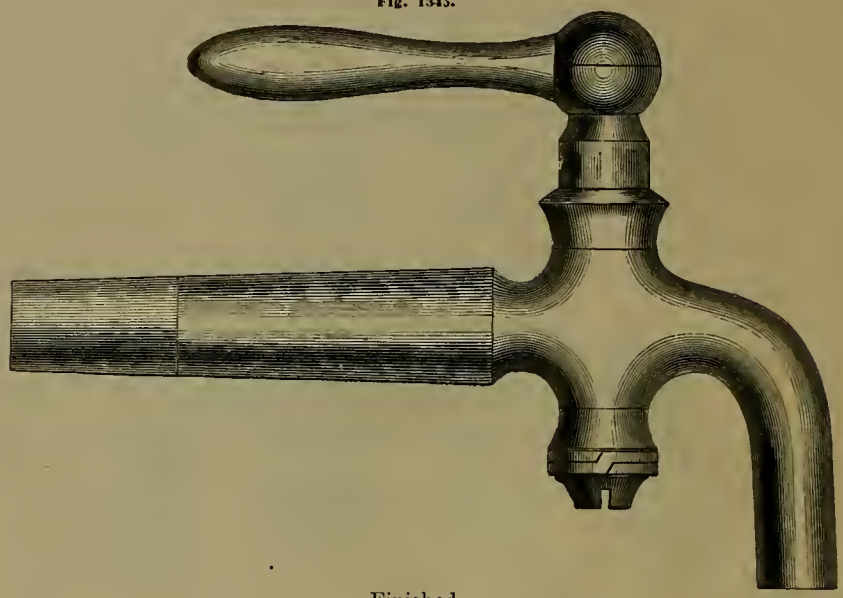
Finished

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 Inches.

PLAIN BIBBS.

Long Shank, for Lead Pipe.

Fig. 1345.

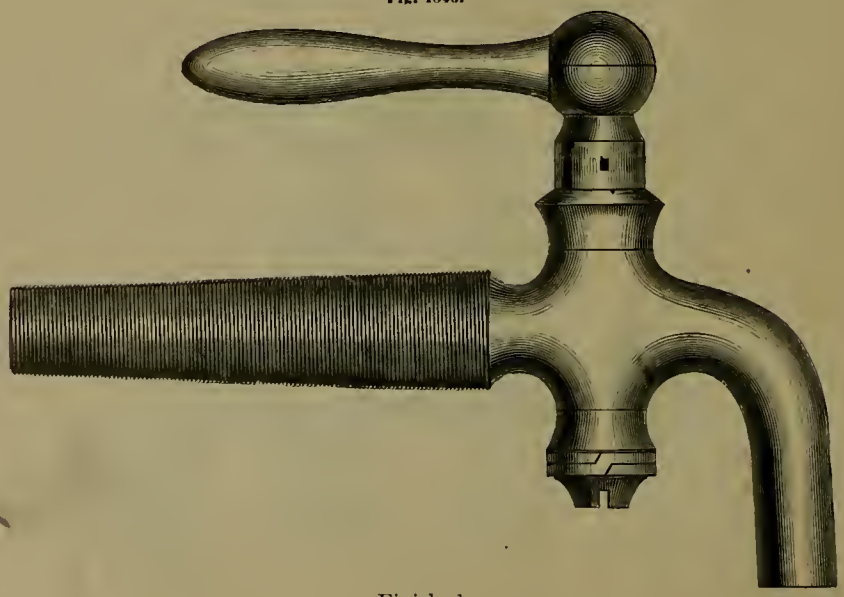


Finished.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Long Shank, Screwed for Wood.

Fig. 1346.



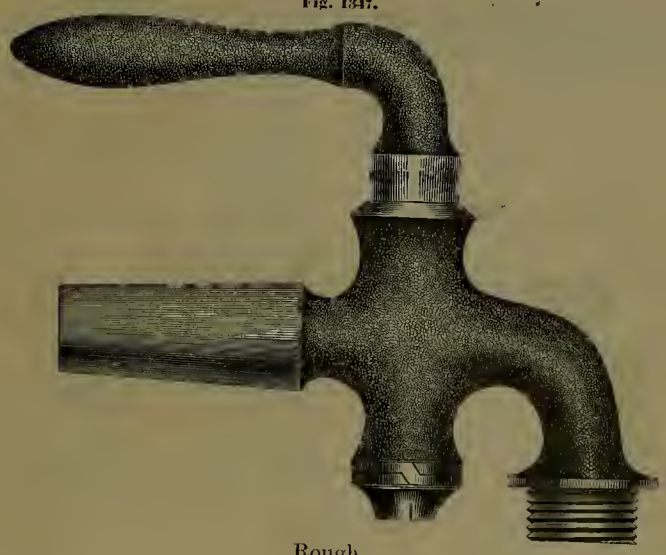
Finished.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Hose Bibbs.

For Lead Pipe.

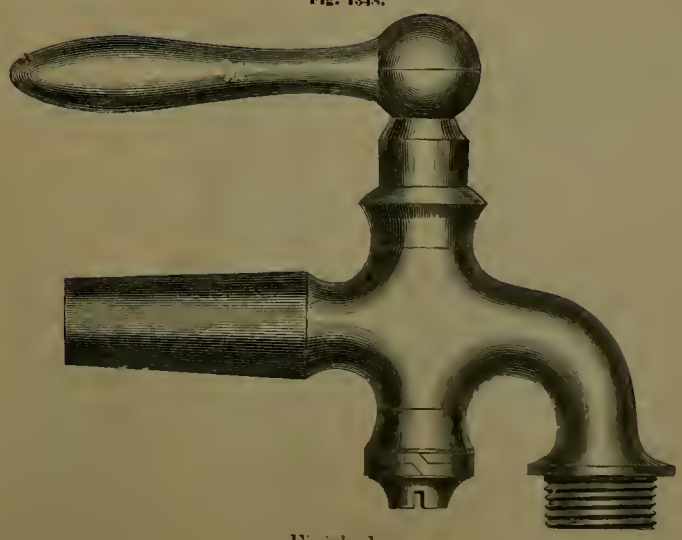
Fig. 1347.



Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 $2\frac{1}{2}$ 3 Inches.

Fig. 1348.



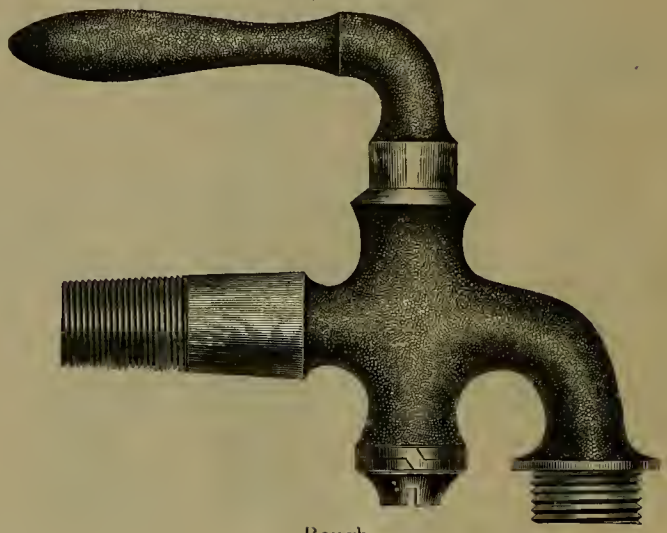
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 $1\frac{1}{2}$ 3 Inches.

Hose Bibbs.

Screwed for Iron Pipe, without Shoulder.

Fig. 1349.

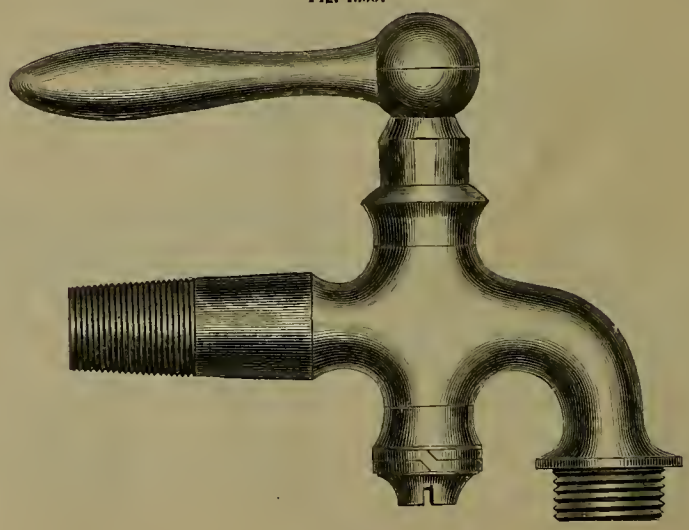


Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches

Screwed for Iron Pipe, without Shoulder

Fig. 1350.



Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Hose Bibbs.

Screwed for Iron Pipe, with Shoulder.

Fig. 1351.

Rough

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Screwed for Iron Pipe, with Shoulder.

Fig. 1352.

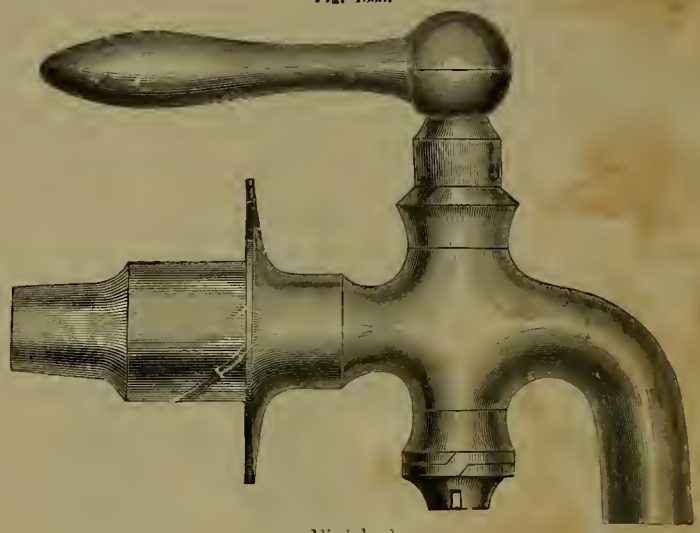
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Plain Bibb.

With Flange and Thimble.

Fig. 1353.



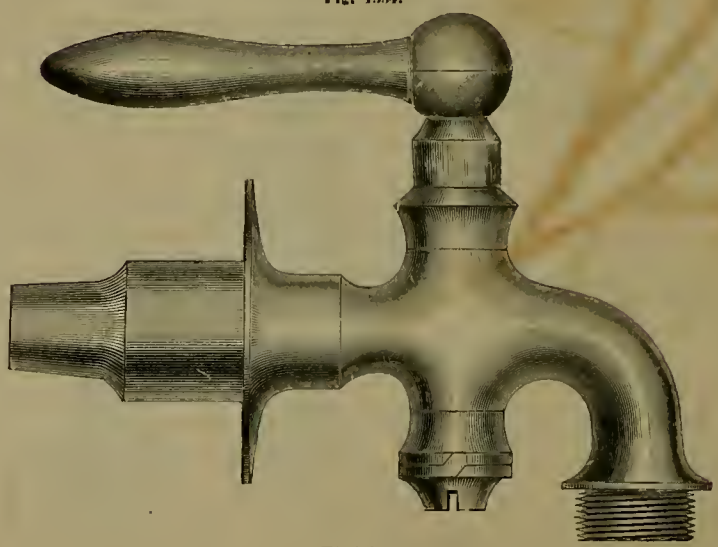
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ Inches.

Hose Bibb.

With Flange and Thimble.

Fig. 1354.



Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ Inches.

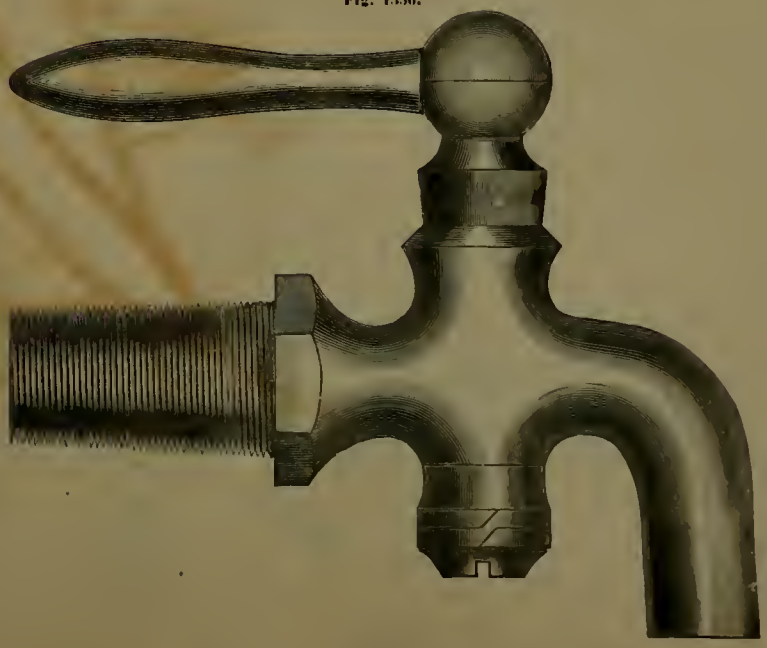
Cistern Cocks.

Fig. 1355.

Rough.

Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Fig. 1356.



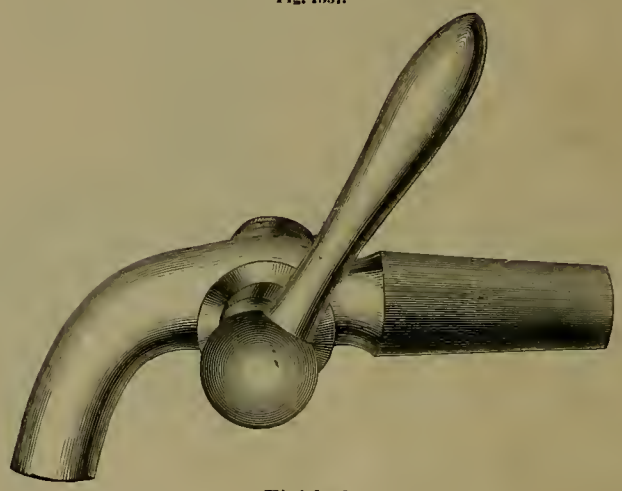
Finished.

Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Wash Tray Bibbs.

To Solder.

Fig. 1357.

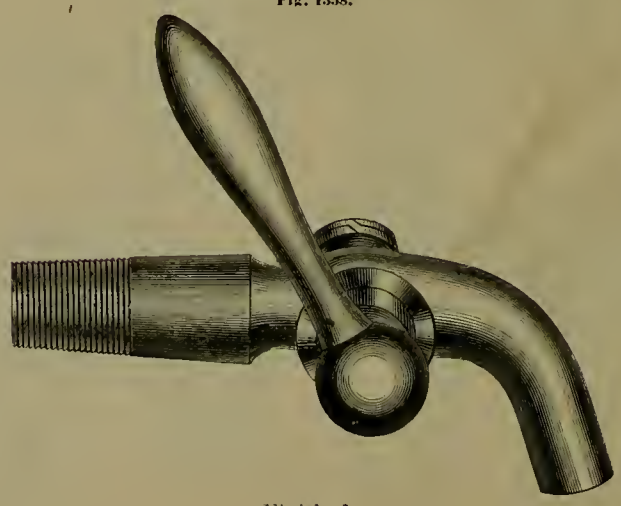


Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Screwed for Iron Pipe, without Shoulder.

Fig. 1358.



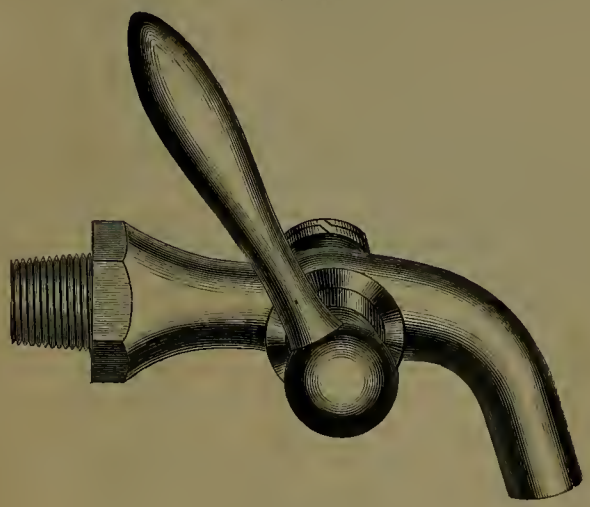
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Wash Tray Bibbs.

Screwed for Iron Pipe, with Shoulder.

Fig. 1359.

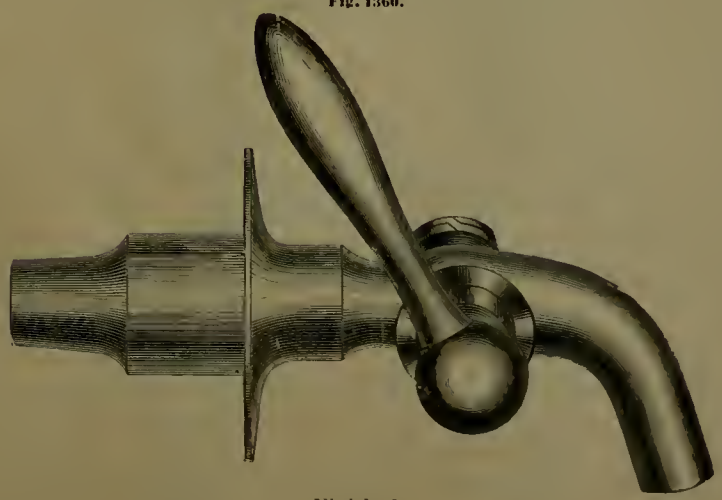


Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Flange and Thimble.

Fig. 1360.



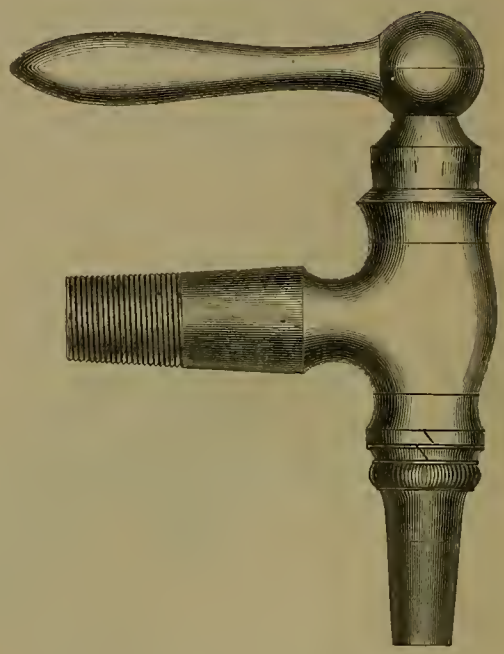
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Bath Bibbs.

Screwed for Iron Pipe, without Shoulder.

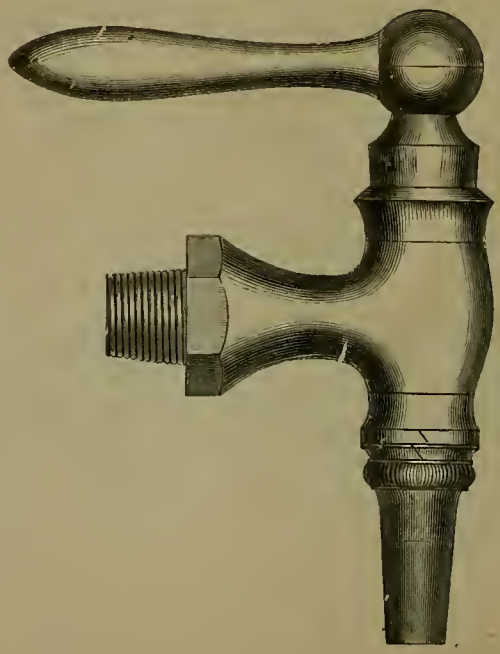
Fig. 1361.



Finished. Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Screwed for Iron Pipe, with Shoulder.

Fig. 1362.

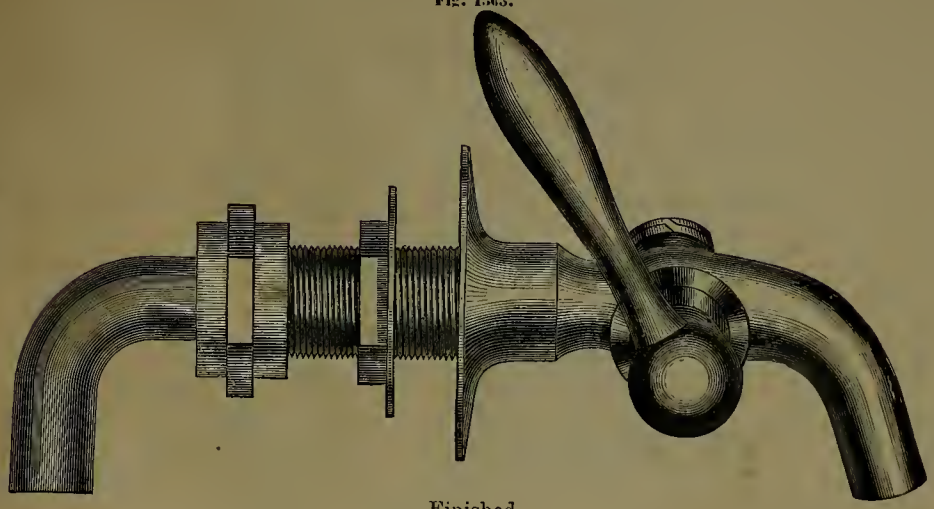


Finished. Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Wash Tray Bibb.

With Flange, Nut and Bent Coupling.

Fig. 1363.



Finished.

Size, ½ ⅝ ¾ Inch.

Bath Bibb.

For Lead Pipe.

Fig. 1364.

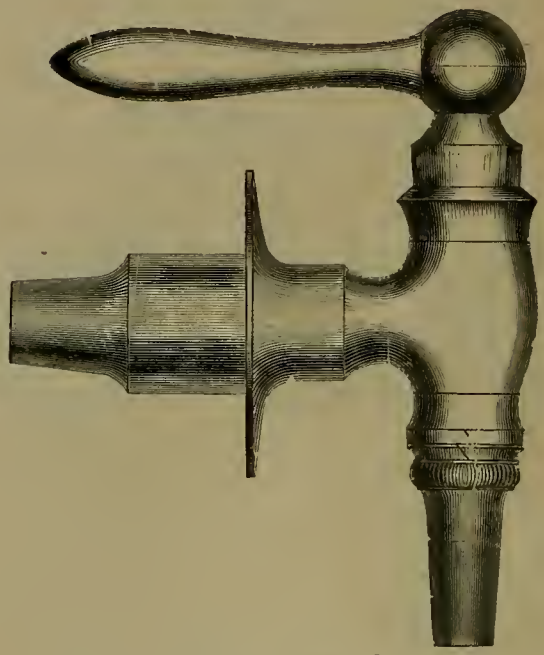
Finished.

Size, ½ ⅝ ¾ 1 Inch.

Bath Bibbs.

Flange and Thimble, Lead Pipe.

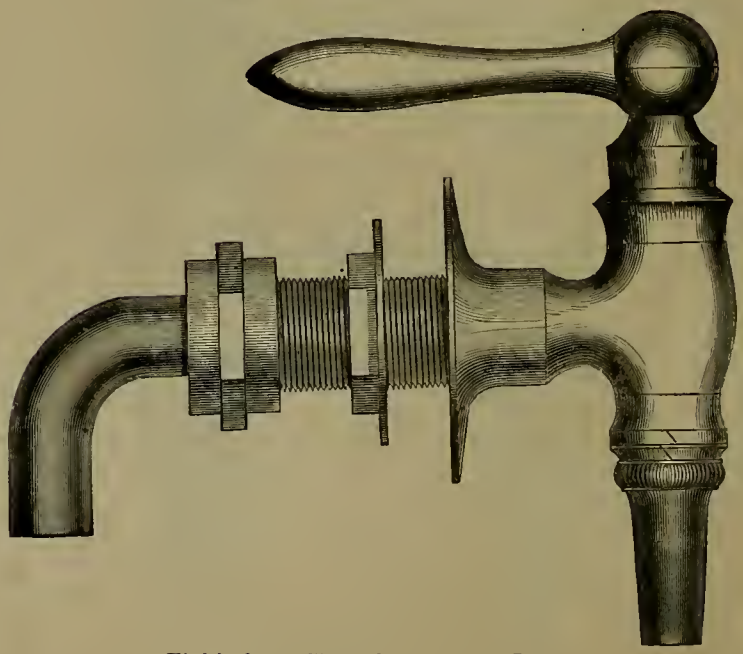
Fig. 1365.



Finished. Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Flange, Nut and Bent Coupling.

Fig. 1366.

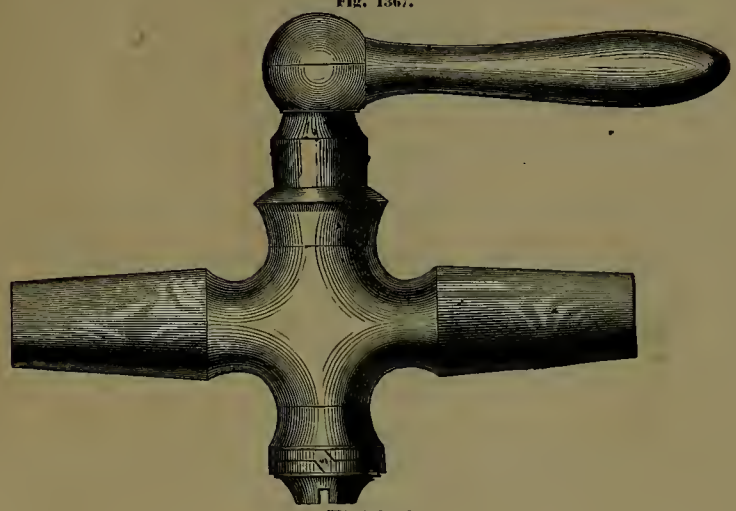


Finished. Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

Plain Stops.

For Lead Pipe.

Fig. 1367.

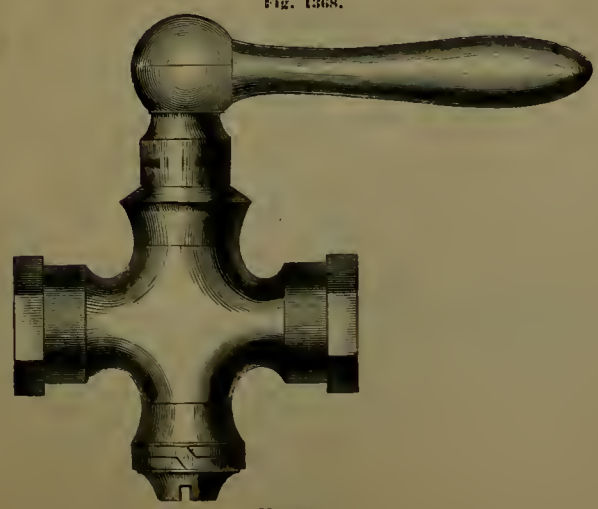


Finished.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 $2\frac{1}{4}$ $2\frac{1}{2}$ 3 Inches.

Screwed for Iron Pipe.

Fig. 1368.



Finished.

Size. $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 Inch.

Rough Stops.

T Handle, Nut and Washer, for Lead Pipe.

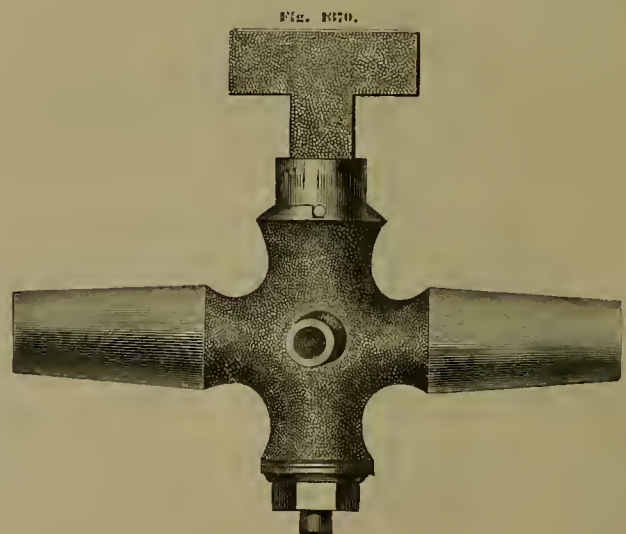
Fig. 1369.

Rough.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

T Handle, Nut and Washer—Tube Waste, Stop on Key.

Fig. 1370.



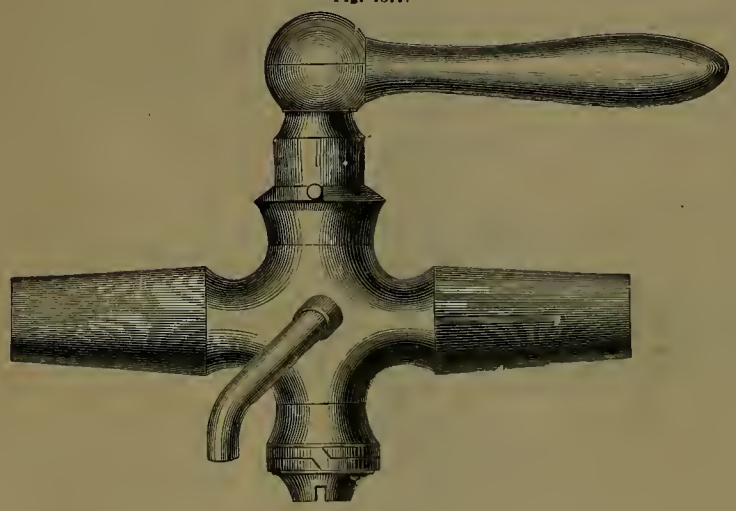
Rough.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Shower Bath Cocks.

For Lead Pipe.

Fig. 1371.

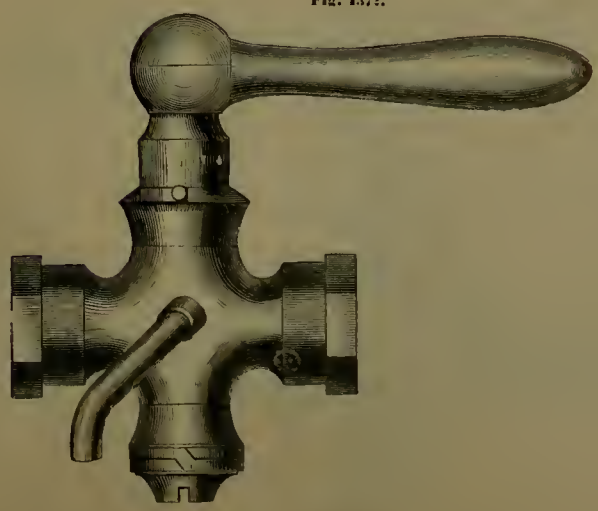


Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Screwed for Iron Pipe.

Fig. 1372.



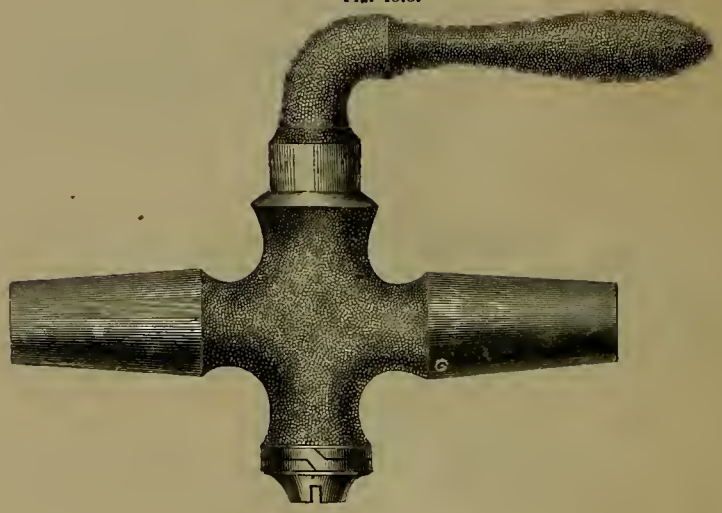
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 Inch.

Rough Stops.

Lever Handle, for Lead Pipe.

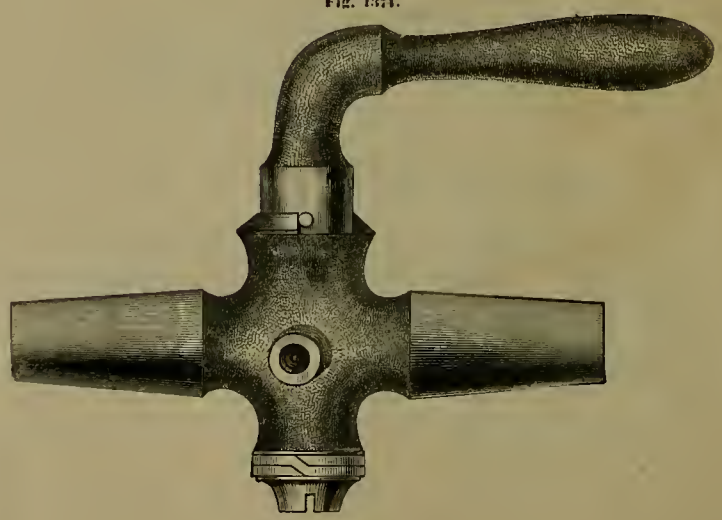
Fig. 1373.



Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 Inches.

Lever Handle, for Lead Pipe—Tube Waste, Stop on Key.

Fig. 1374.



Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 $2\frac{1}{4}$ $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 Inches.

Rough Stops.

T Handle, Nut and Washer, Screwed for Iron Pipe.

Fig. 1375.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

T Handle, Nut and Washer, Screwed for Iron Pipe.

Tube Waste, Stop on Key.

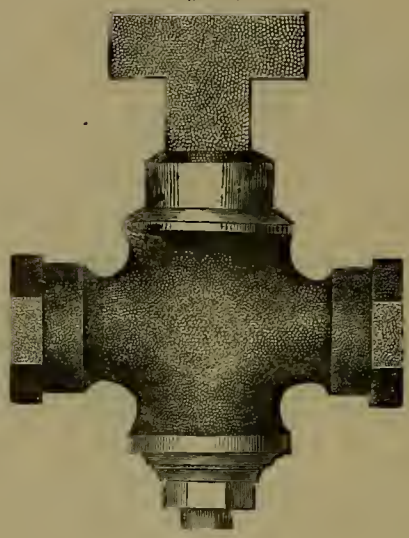
Fig. 1376.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Rough Stops.

T Handle, Round Way, Nut and Washer, Screwed for Iron Pipe.

Fig. 1377.

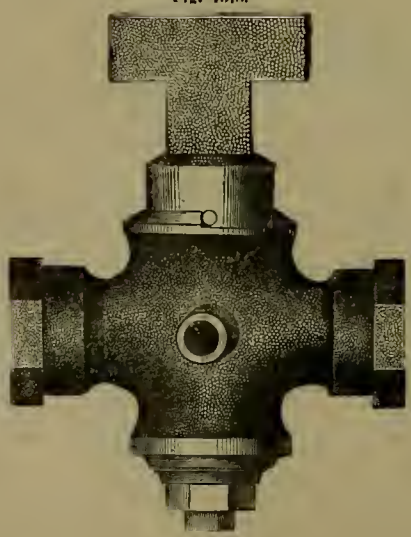


Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

T Handle, Round Way, Nut and Washer, Screwed for Iron Pipe.

Tube Waste, Stop on Key.

Fig. 1378.

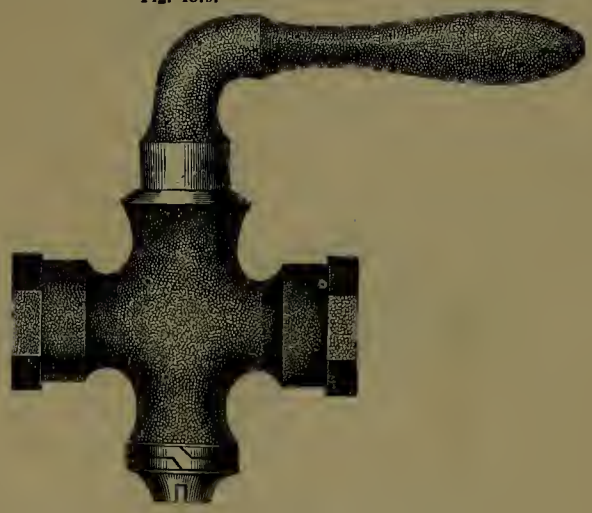


Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Rough Stops.

Lever Handle, Screwed for Iron Pipe.

Fig. 1379.

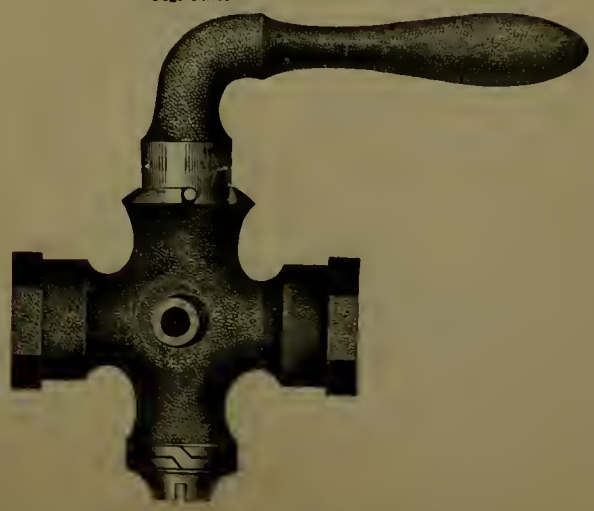


Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Lever Handle, Screwed for Iron Pipe.

Tube Waste, Stop on Key.

Fig. 1380.

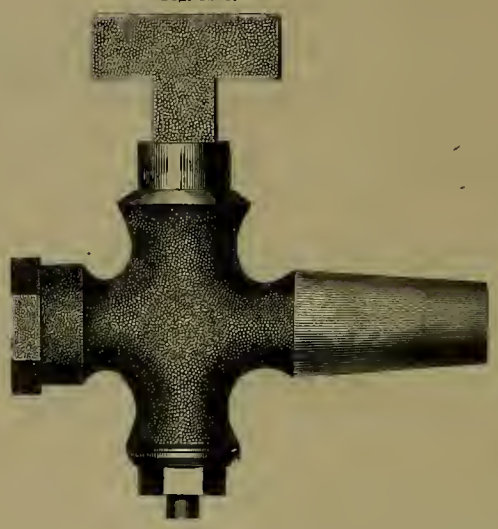


Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Rough Stops.

T Handle, Nut and Washer, for Lead and Iron Pipe.

Fig. 1381.

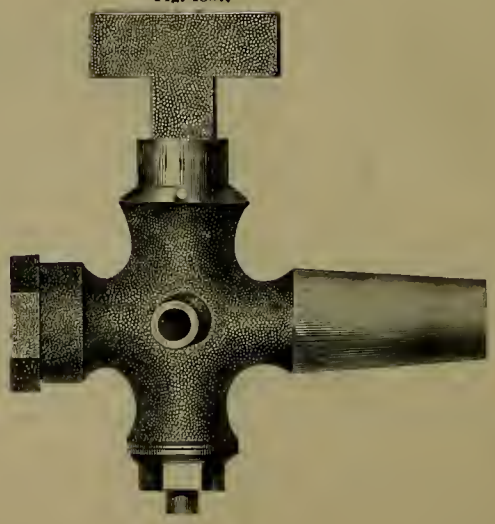


Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

T Handle, Nut and Washer, for Lead and Iron Pipe.

Tube Waste, Stop on Key.

Fig. 1382.



Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Rough Stops.

Lever Handle, for Lead and Iron Pipe.

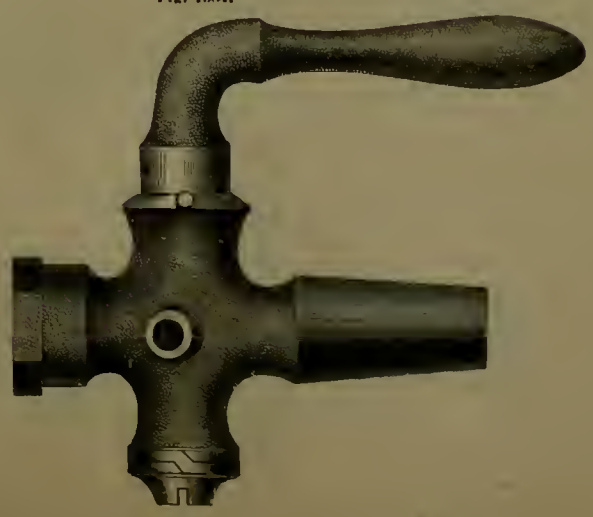
Fig. 1383.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Lever Handle, for Lead and Iron Pipe.

Tube Waste, Stop on Key.

Fig. 1384.

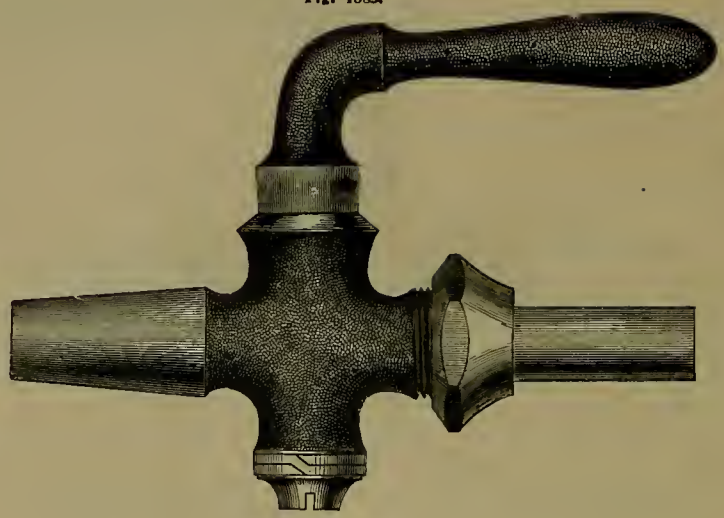


Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Rough Stops.

Lever Handle, with Plain Coupling.

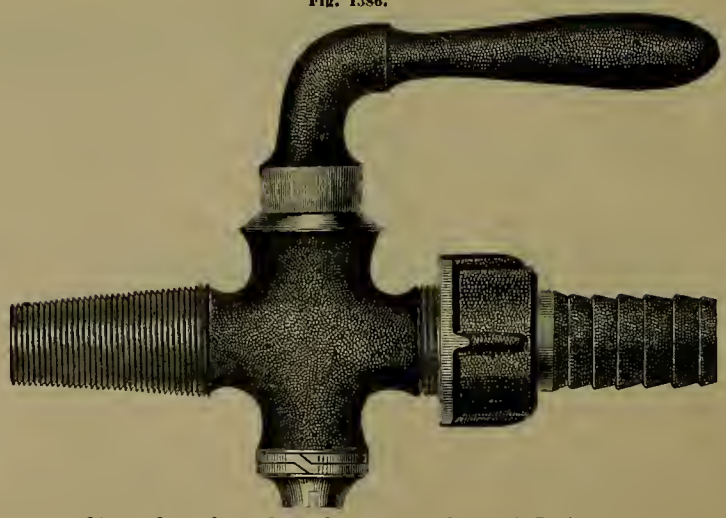
Fig. 1385.



Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Lever Handle, Screwed for Wood, with Plain Coupling.

Fig. 1386.

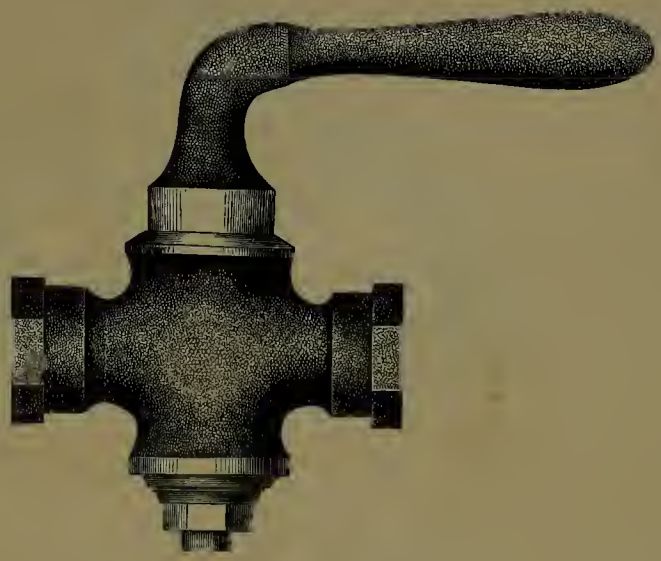


Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches

Rough Stops.

Lever Handle, Round Way, Screwed for Iron Pipe.

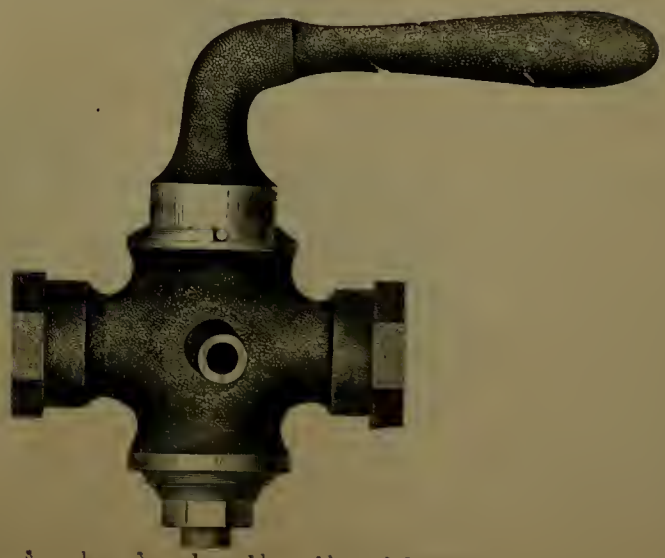
Fig. 1387.



Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Lever Handle, Round Way, Screwed for Iron Pipe.
Tube Waste, Stop on Key.

Fig. 1388.

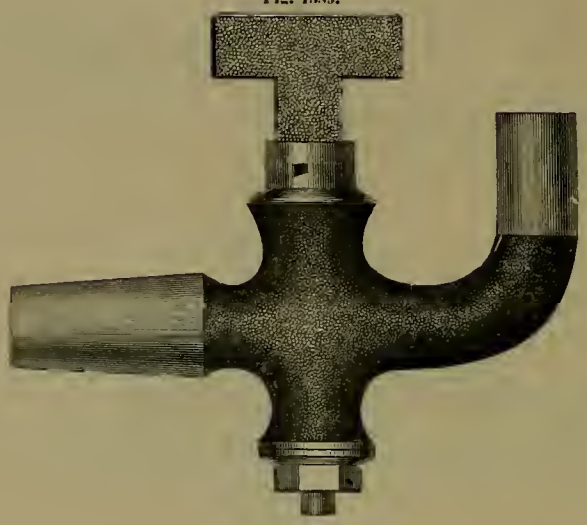


Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Hydrant Cocks.

Nut and Washer, for Lead Pipe.

Fig. 1389.

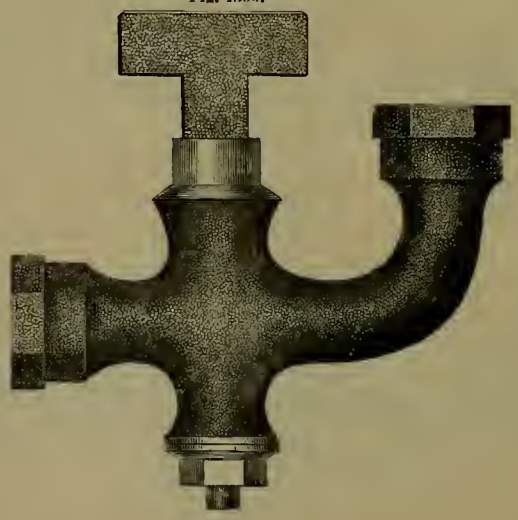


Rough.

Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Nut and Washer, Screwed for Iron Pipe.

Fig. 1390.

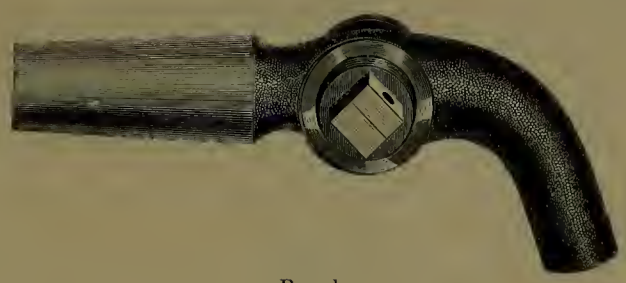


Rough.

Size, $\frac{1}{2}$ $\frac{3}{4}$ 1 Inch.

Ball Cock.

Fig. 1391.



Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{2}$ Inch.

Ball Cock.

Screwed for Iron Pipe, with Shoulder.

Fig. 1392.

Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ Inches.

BRASS ROD OR MUNTZ METAL.

COPPER RODS.

SHEET BRASS.

SEAMLESS BRASS TUBING.

BABBITT METAL.

WHITE BRASS.

RUDDER BRACES, SPIKES & NAILS.

RUBBER PACKING.

RUBBER HOSE.

ASBESTOS PACKING.

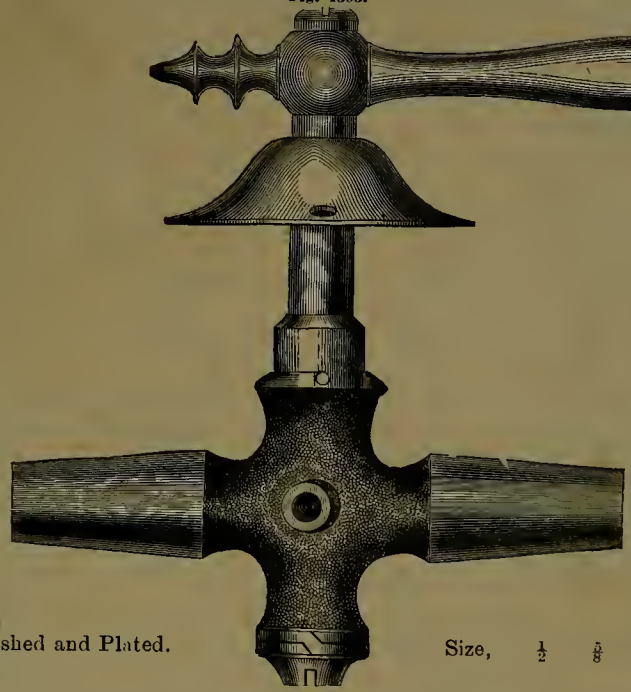
SHEET ASBESTOS.

SELDON'S STEAM PACKING.

SHOWER STOPS.

Flange and Handle.

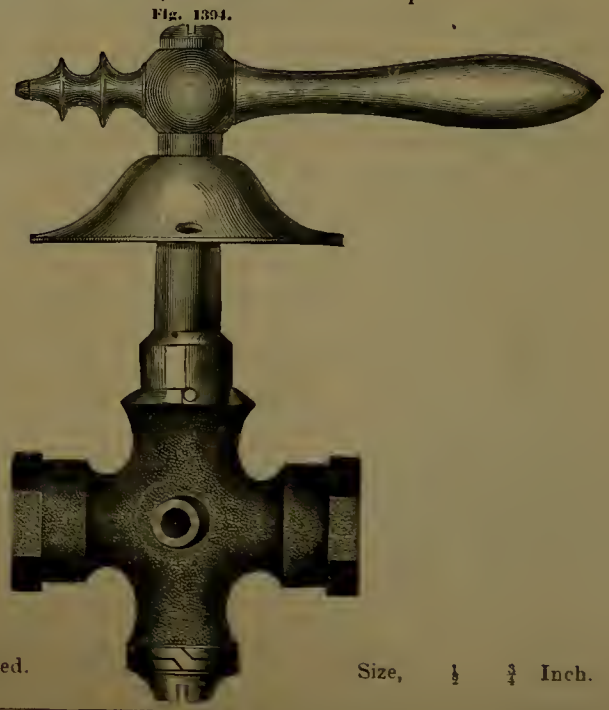
Fig. 1393.



Rough, Finished and Plated. Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

Flange and Handle, Screwed for Iron Pipe.

Fig. 1394.

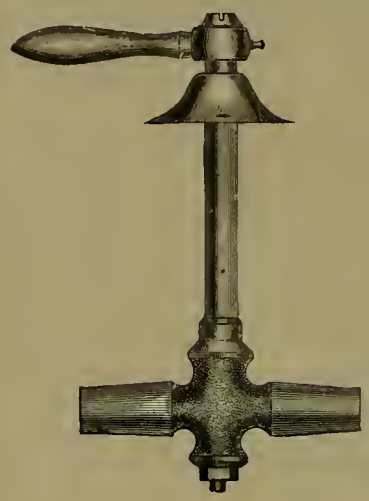


Rough, Finished and Plated. Size, $\frac{1}{2}$ $\frac{3}{4}$ Inch.

Hopper Cock.

Long Stem, Flange and Handle.

Fig. 1395.

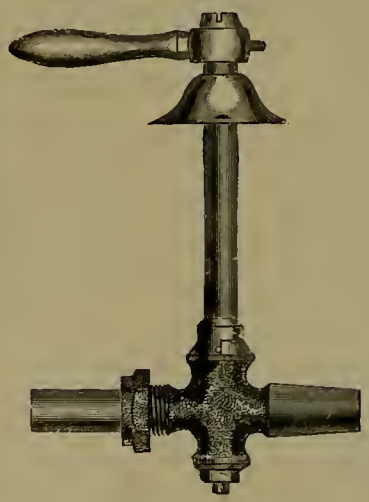


Rough and Finished.

Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

Ship Closet Cock.

Fig. 1396.



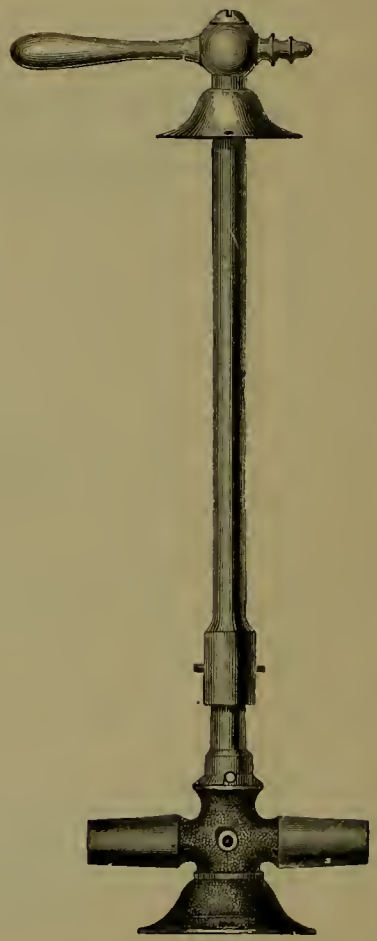
Rough.

Size, $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Pedestal Hopper Cock.

Flange and Handle.

Fig. 1397.



Rough and Finished.

Size, $\frac{5}{8}$ Inch.

Counter Cocks.

Round.

Fig. 1398.

Finished and Plated.

Octagon.

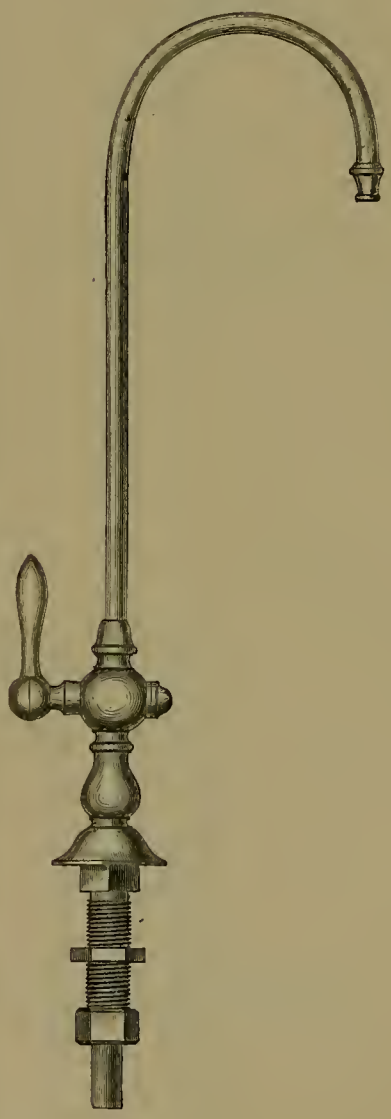
Fig. 1399.

Finished and Plated.

Pantry Cocks.

Plain.

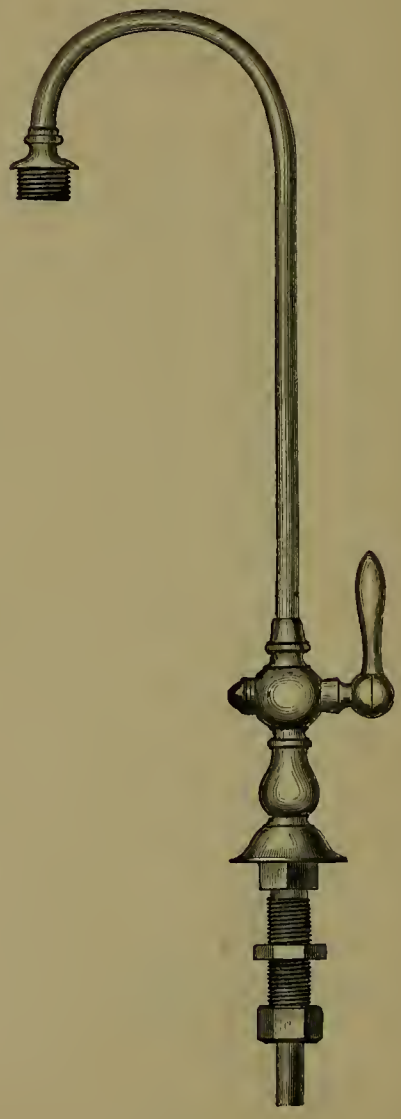
Fig. 1400.



Finished and Plated.

Hose End.

Fig. 1401.

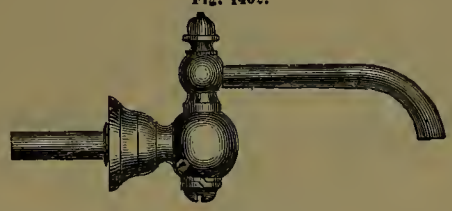


Finished and Plated.

Bracket Basin Cock.

Plain.

Fig. 1402.

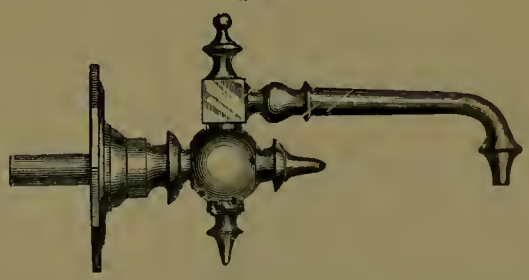


Finished and Plated.

Bracket Plated Cock.

Octagon.

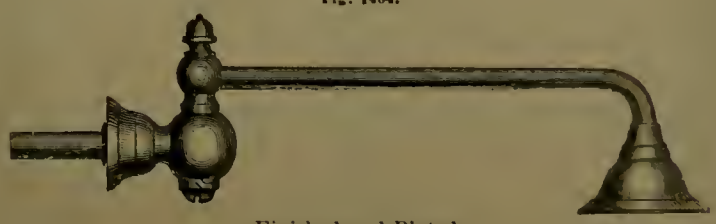
Fig. 1403.



Finished and Plated.

Bracket Shampooing Cock.

Fig. 1404.



Finished and Plated.

The above cuts are one-half of the full size.

Basin Cocks.

A. Fig. 1405.

B. Fig. 1406.

C. Fig. 1407.

D. Fig. 1408.

Finished and Plated.

The above cuts are one-third of the full size.

Basin Cocks.

Gold Lined Ring Cup.

M. Fig. 1409.

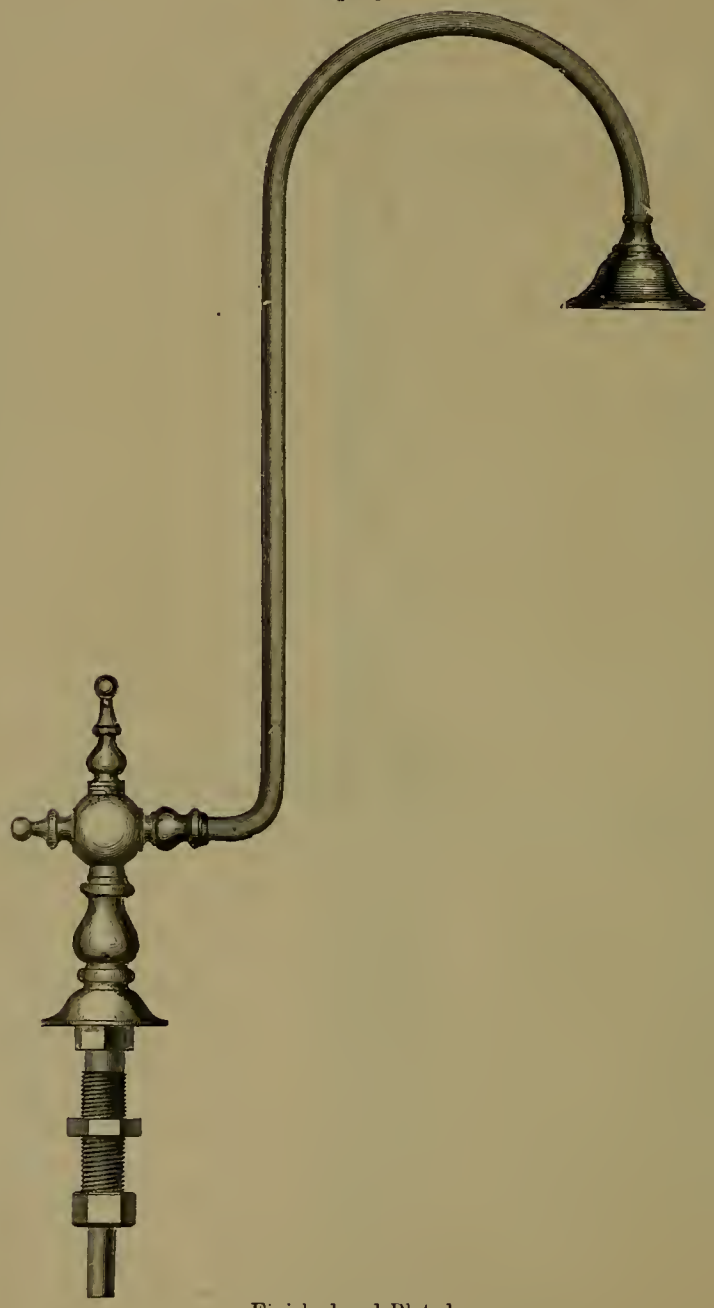
O. Fig. 1410.

The above cuts are one-third of the full size.

Shampooing Cock.

Upright.

Fig. 1411.



Finished and Plated.

Double Bath Cock.

Fig. 1412.

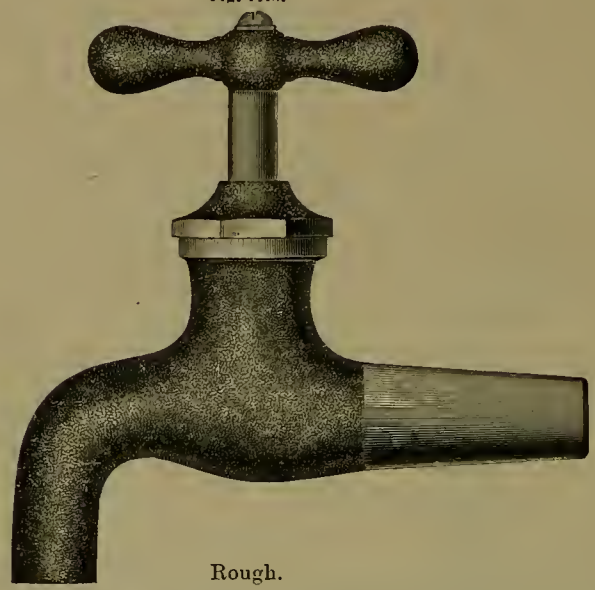
Finished and Plated.

With rubber tube and sprinkler complete.

Compression Plain Bibbs.

For Lead Pipe.

Fig. 1413.

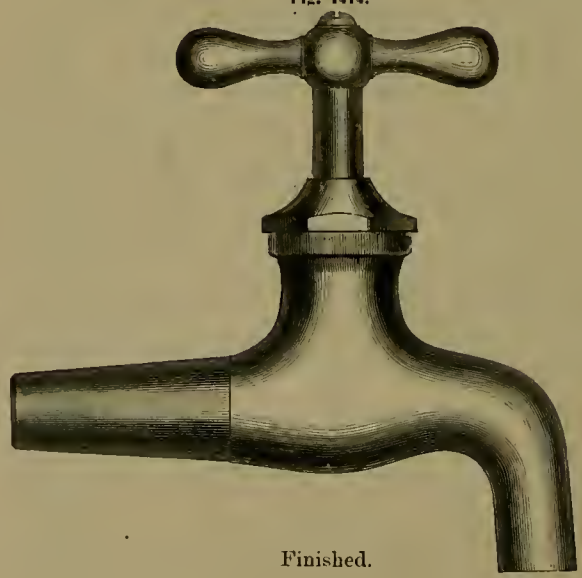


Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

For Lead Pipe.

Fig. 1414.



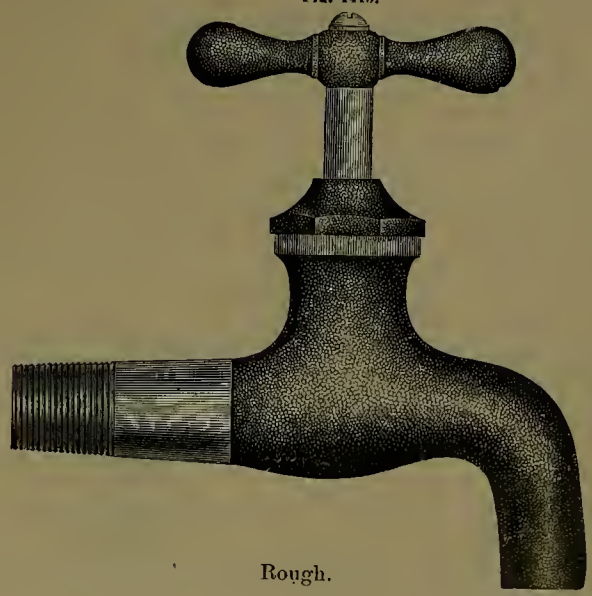
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Compression Plain Bibbs.

Screwed for Iron Pipe, without Shoulder.

Fig. 1415.

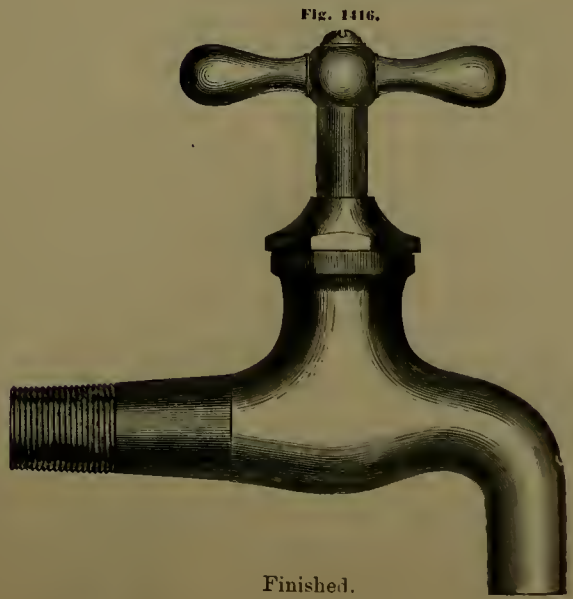


Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Screwed for Iron Pipe.

Fig. 1416.



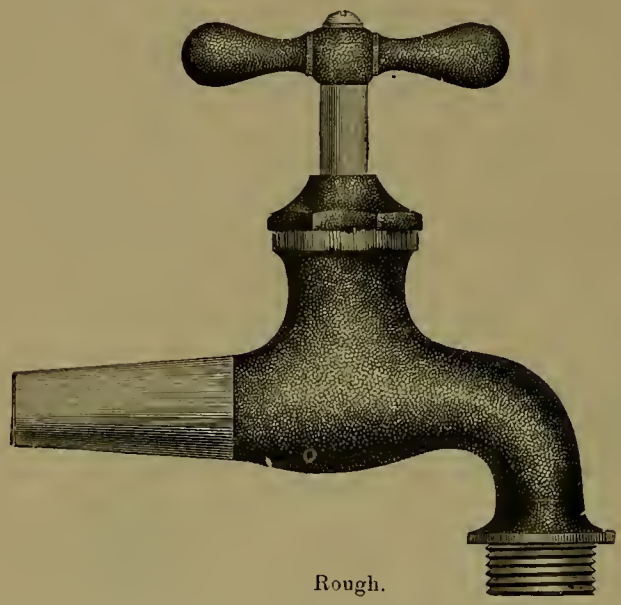
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Compression Hose Bibbs.

For Lead Pipe.

Fig. 1417.

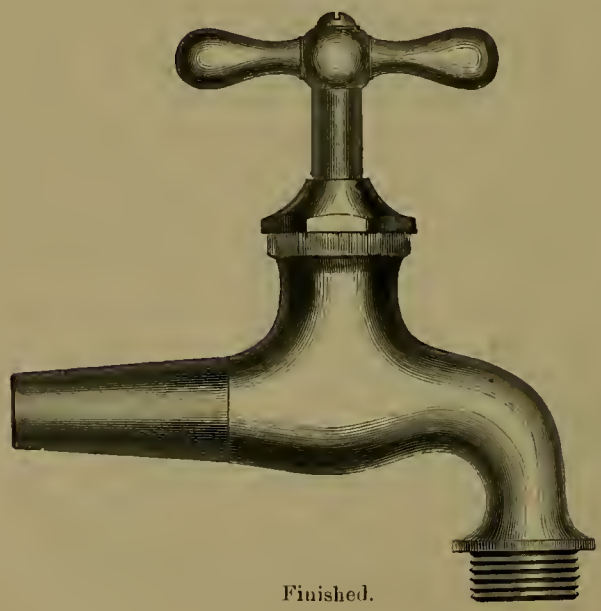


Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

For Lead Pipe.

Fig. 1418.



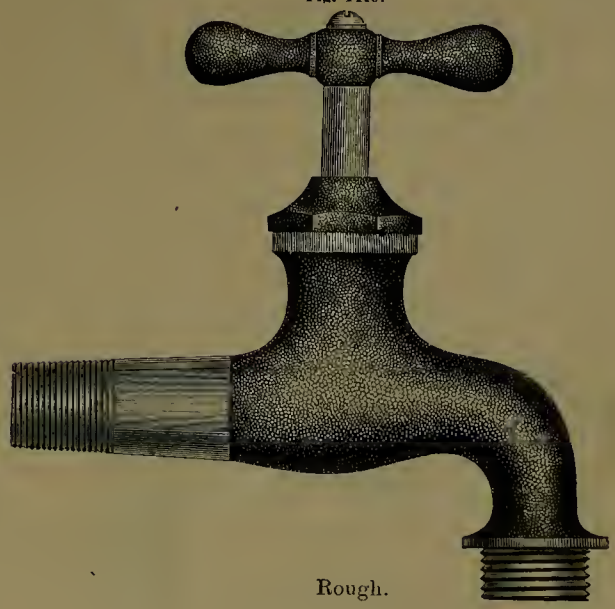
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Compression Hose Bibbs.

Screwed for Iron Pipe, without Shoulder.

Fig. 1419.



Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Screwed for Iron Pipe, without Shoulder.

Fig. 1420.

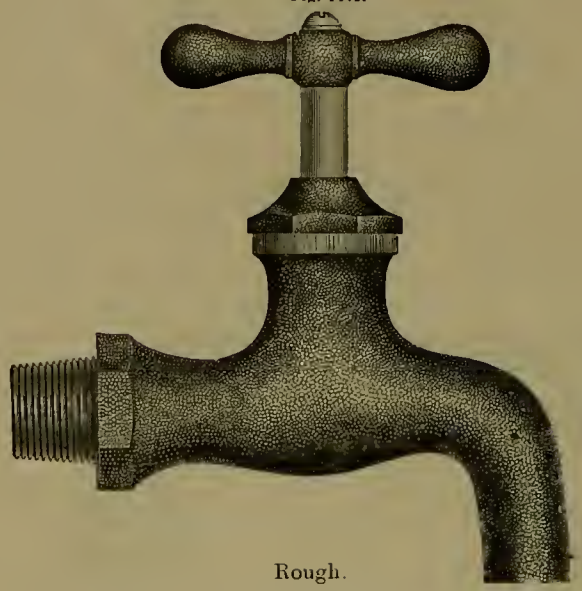
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Compression Plain Bibbs.

Screwed for Iron Pipe, with Shoulder.

Fig. 1421.

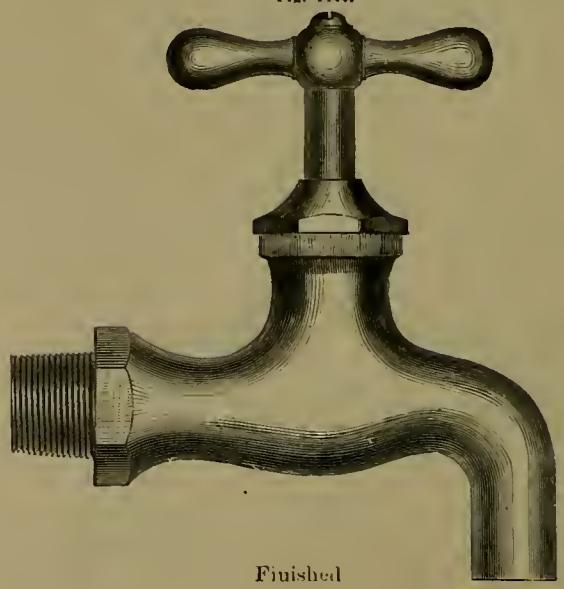


Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Screwed for Iron Pipe, with Shoulder.

Fig. 1422.



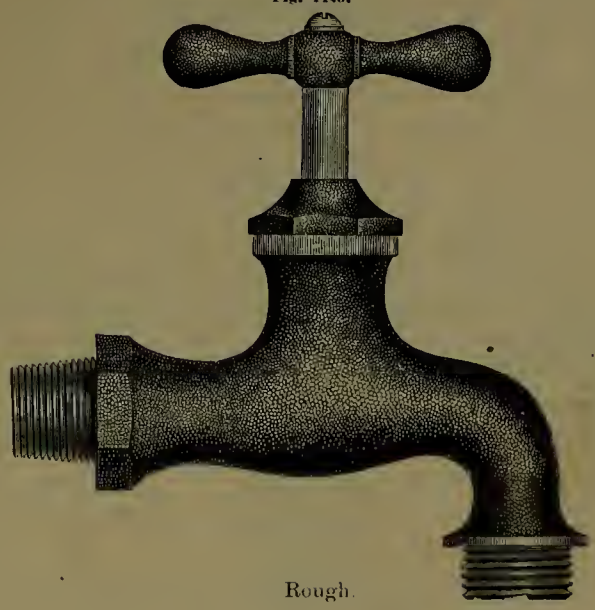
Finished

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Compression Hose Bibbs.

Screwed for Iron Pipe, with Shoulder.

Fig. 1423.

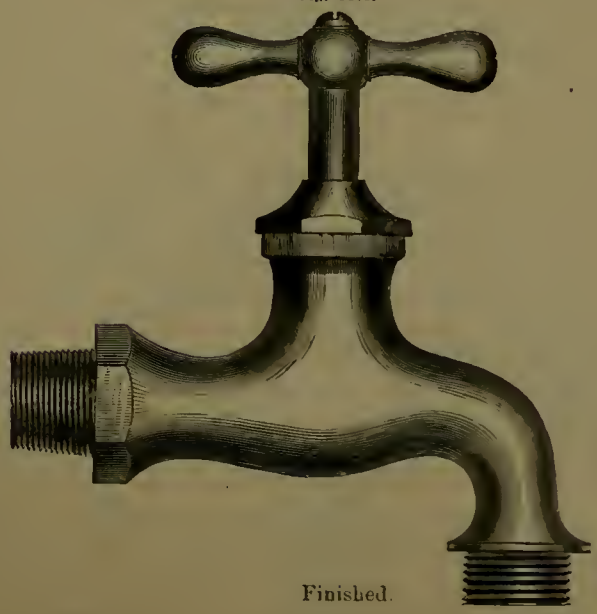


Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Screwed for Iron Pipe, with Shoulder.

Fig. 1424.



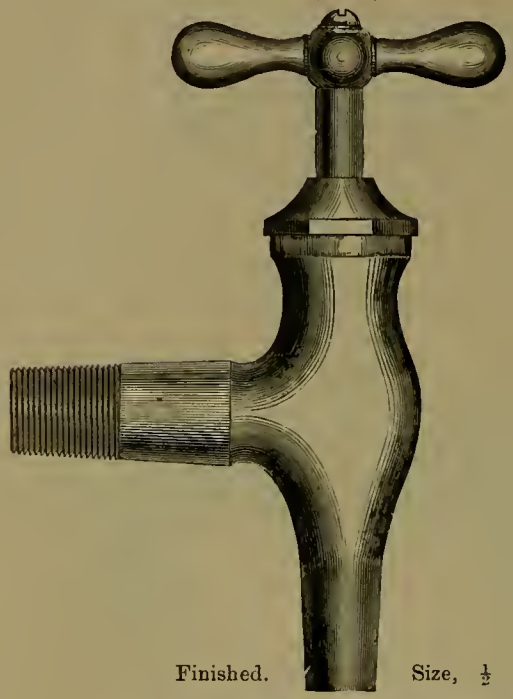
Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Compression Bath Bibbs.

Screwed for Iron Pipe, without Shoulder.

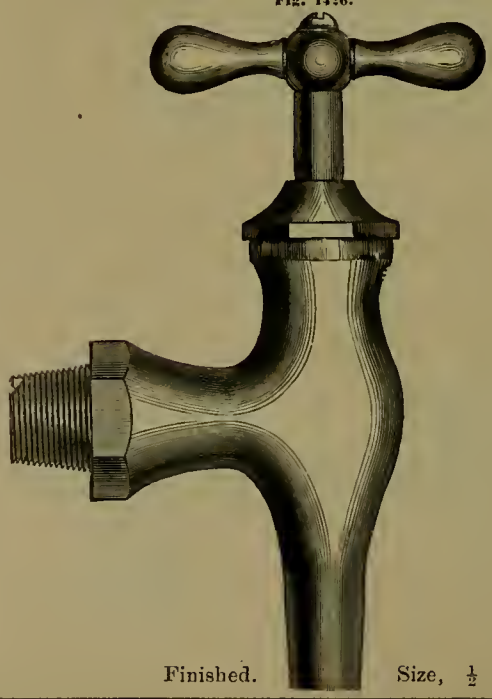
Fig. 1425.



Finished. Size, ½ ⅝ ¾ 1 Inch.

Screwed for Iron Pipe, with Shoulder.

Fig. 1426.

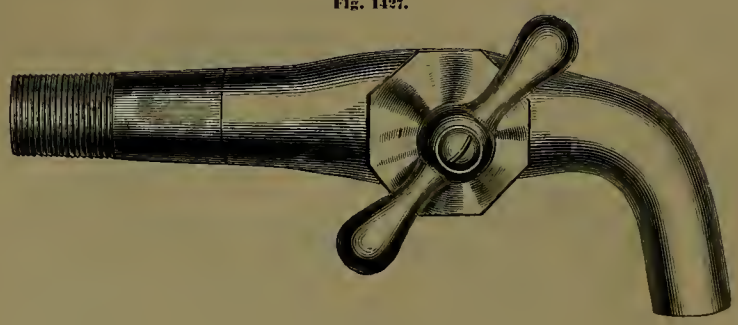


Finished. Size, ½ ⅝ ¾ 1 Inch.

Compression Wash Tray Bibbs.

Screwed for Iron Pipe, without Shoulder.

Fig. 1427.

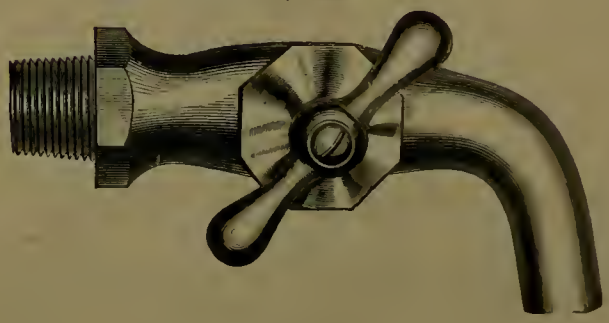


Finished.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

Screwed for Iron Pipe, with Shoulder.

Fig. 1428.



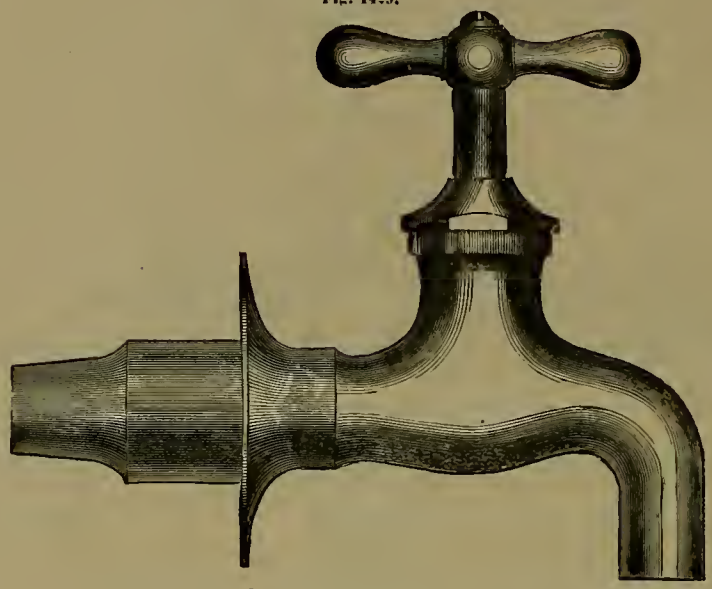
Finished

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

Compression Plain Bibbs.

With Flange and Thimble.

Fig. 1429.

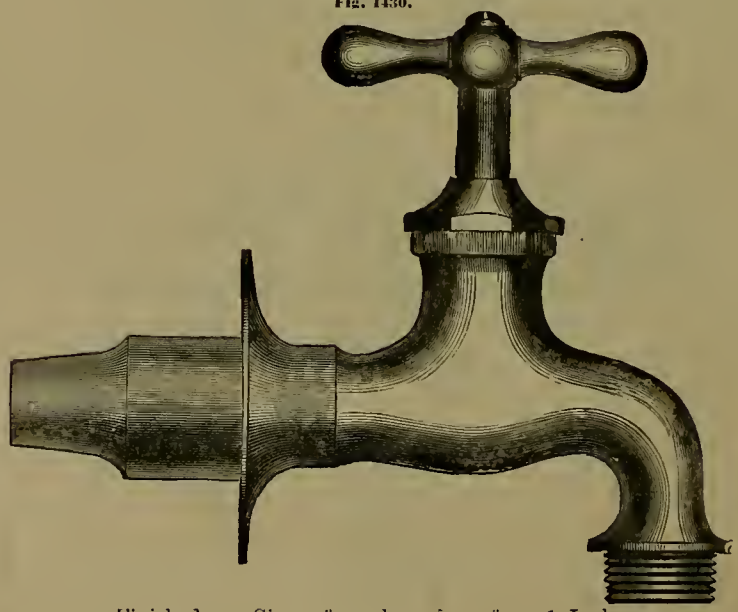


Finished. Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Compression Hose Bibbs.

With Flange and Thimble.

Fig. 1430.

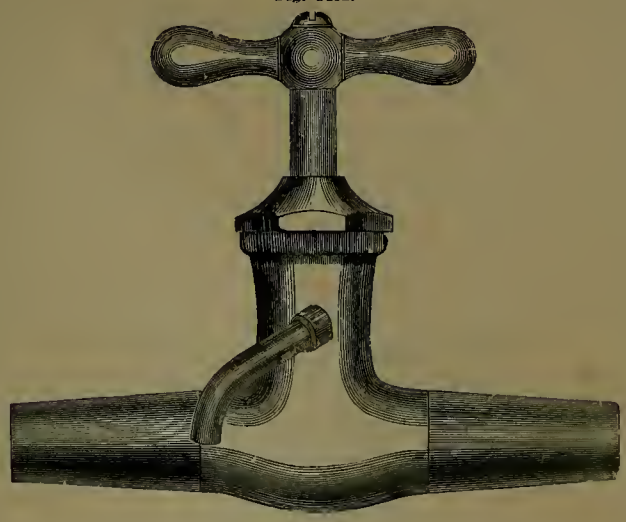


Finished. Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Compression Shower Bath Cocks.

For Lead Pipe.

Fig. 1431.



Finished and Plated.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Screwed for Iron Pipe.

Fig. 1432.

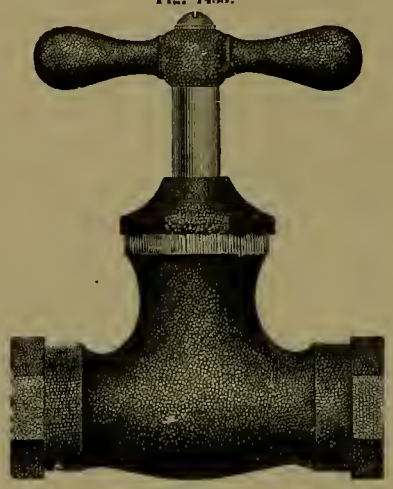
Finished and Plated.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Compression Stops.

Screwed for Iron Pipe, with or without Waste.

Fig. 1433.

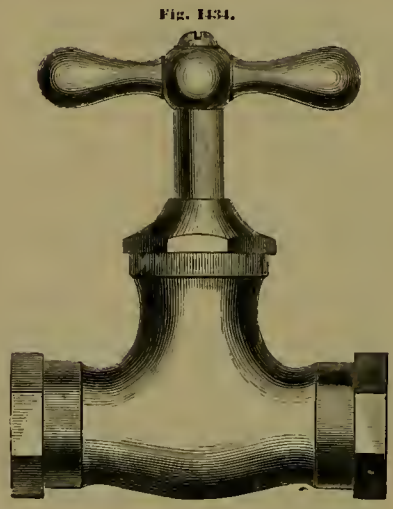


Rough.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Screwed for Iron Pipe.

Fig. 1434.



Finished and Plated.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Compression Basin Cocks.

No. 0. Fig. 1435.

No. 1. Fig. 1436.

No. 4. Fig. 1437.

Finished and Plated.

The above cuts are one-third of the full size.

Compression Basin Cocks.

No. 5. Fig. 1438.

No. 6. Fig. 1439.

No. 11. Fig. 1440.

No. 12. Fig. 1441.

Finished and Plated.

The above cuts are one-third of the full size.

Compression Pantry Cocks.

Flain.

Fig. 1142.

Finished and Plated.

Hose End.

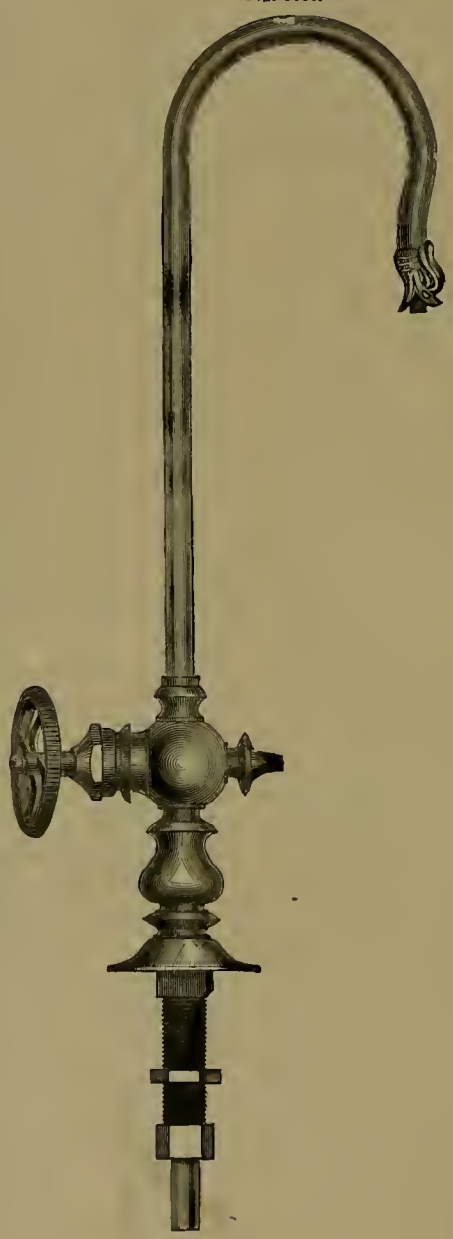
Fig. 1143.

Finished and Plated.

Compression Pantry Cocks.

Large—Plain.

Fig. 1444.



Finished and Plated.

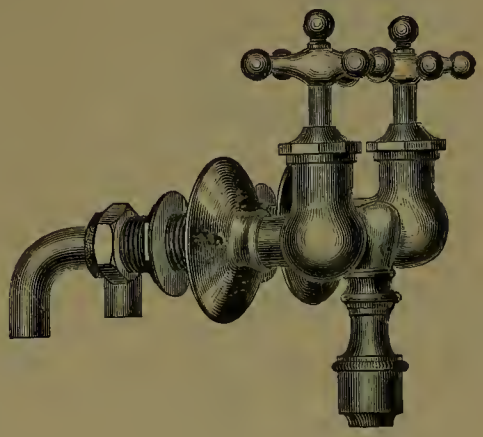
Large—Hose End.

Fig. 1445.

Finished and Plated.

Compression Double Bath Cocks.

Fig. 1446.



Finished and Plated.

With Rubber Tube and Sprinkler complete.

Handles in Front.

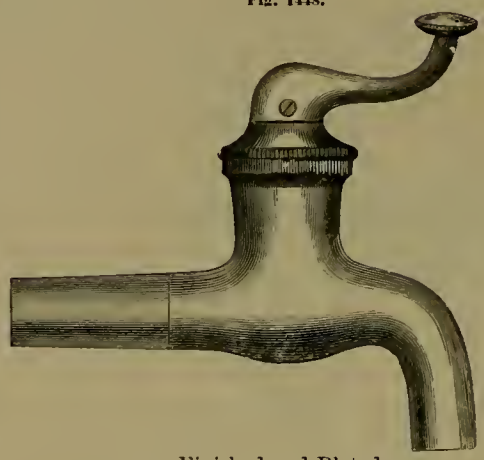
Fig. 1447.

With Rubber Tube and Sprinkler complete.

Telegraph Plain Bibbs.

For Lead Pipe.

Fig. 1448.

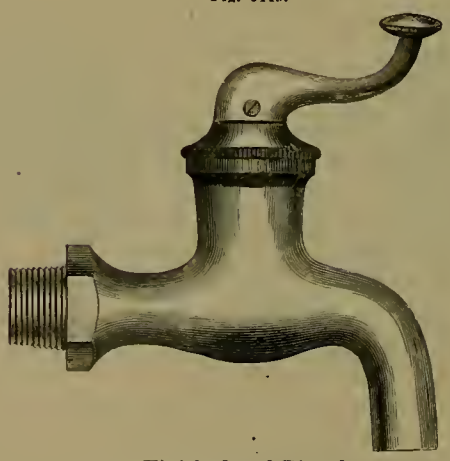


Finished and Plated.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

Screwed for Iron Pipe, with Shoulder.

Fig. 1449.



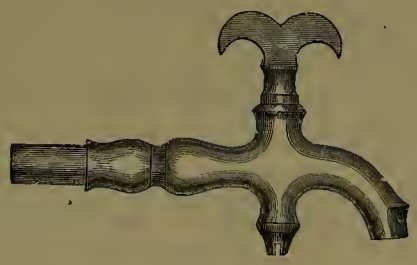
Finished and Plated.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

URN COCKS.

T. Handle.

Fig. 1450.



Finished and Plated.

Nos. 09, 07, 05.

Drop Handle.

Fig. 1451.

Finished and Plated.

Nos. 20, 21, 22, 23.

Ivory T Handle.

Fig. 1452.

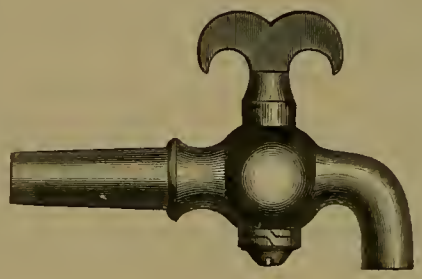
Finished and Plated.

Nos. 0, 1, 2, 3, 4.

Globe Cocks.

T Handle, Tinned End.

Fig. 1453.

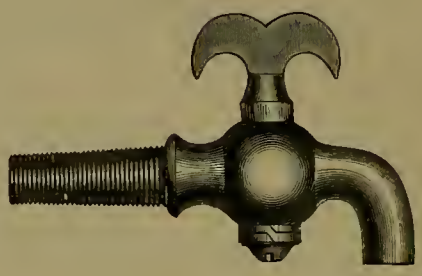


Finished.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

T Handle, to Screw.

Fig. 1454.

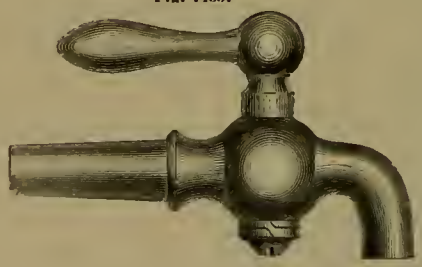


Finished.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Lever Handle, Tinned End.

Fig. 1455.



Finished.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Lever Handle, to Screw.

Fig. 1456.

Finished.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Lock Cocks.

To Drive.

NEW PATTERN.

Fig. 1457.

Finished.

Size, $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

To Screw.

NEW PATTERN.

Fig. 1458.

Finished

Size, $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 Inch.

Racking Cocks.

To Drive.

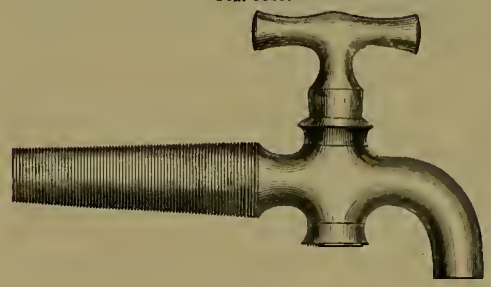
Fig. 1459.

Finished.

Size, $\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{9}{16}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{7}{8}$ 1 $1\frac{1}{8}$ $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

To Screw.

Fig. 1460.

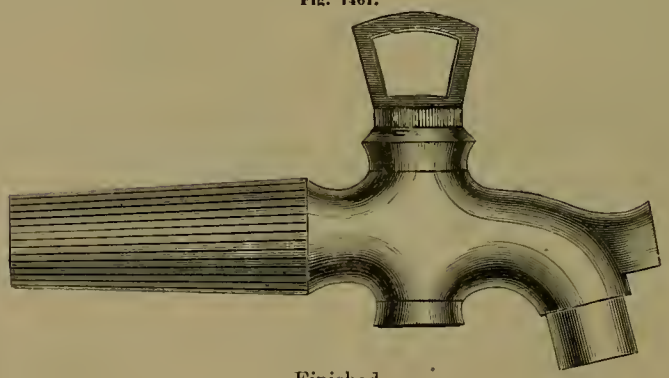


Finished.

Size, $\frac{1}{4}$ $\frac{5}{16}$ $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{9}{16}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{7}{8}$ 1 $1\frac{1}{8}$ $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

To Drive, Loop Handle.

Fig. 1461.



Finished.

Size, $1\frac{1}{8}$ $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches

Bottling Cocks.

To Drive.

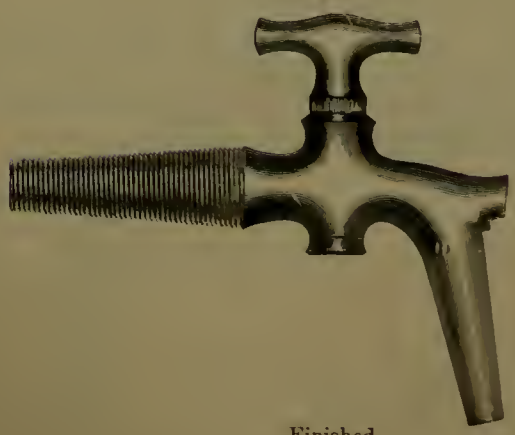
Fig. 1462.

Finished.

Size, $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

To Screw.

Fig. 1463.



Finished.

Size, $\frac{3}{8}$ $\frac{7}{16}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

Bottling Cocks.

To Drive, Screw Nozzle.

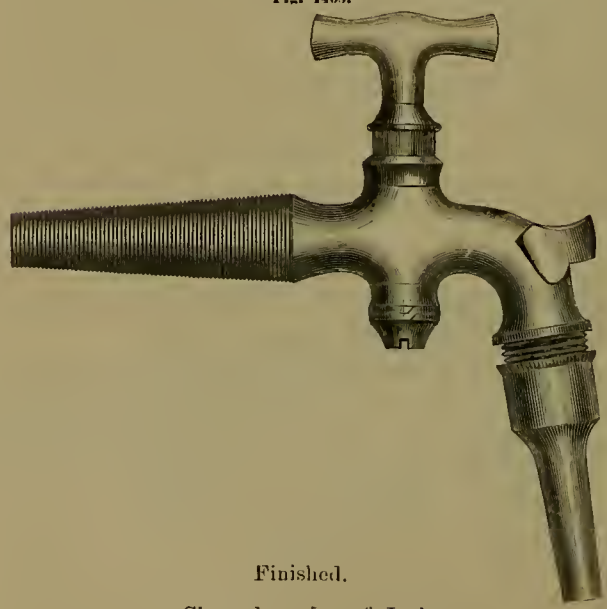
Fig. 1464.

Finished.

Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

To Screw, Screw Nozzle.

Fig. 1465.



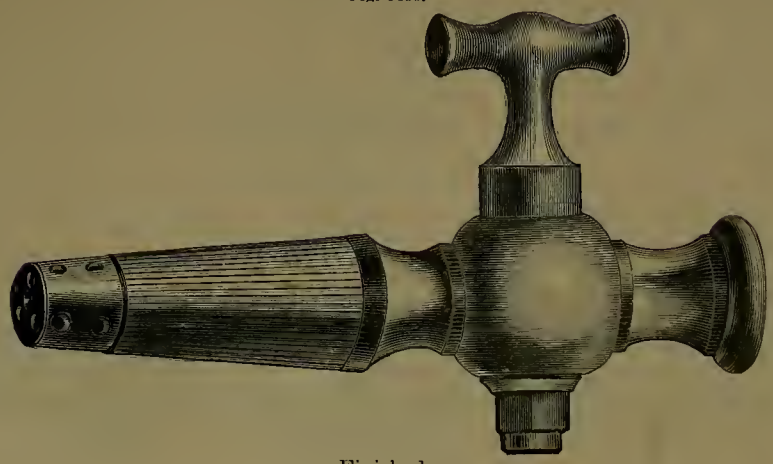
Finished.

Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ Inch.

Beer Cock.

To Drive.

Fig. 1466.



Finished.

Size, 8 10 12 14 16 18 20 22 24 Inches Long.

Bottling Beer Cock.

To Drive, Screw Nozzle.

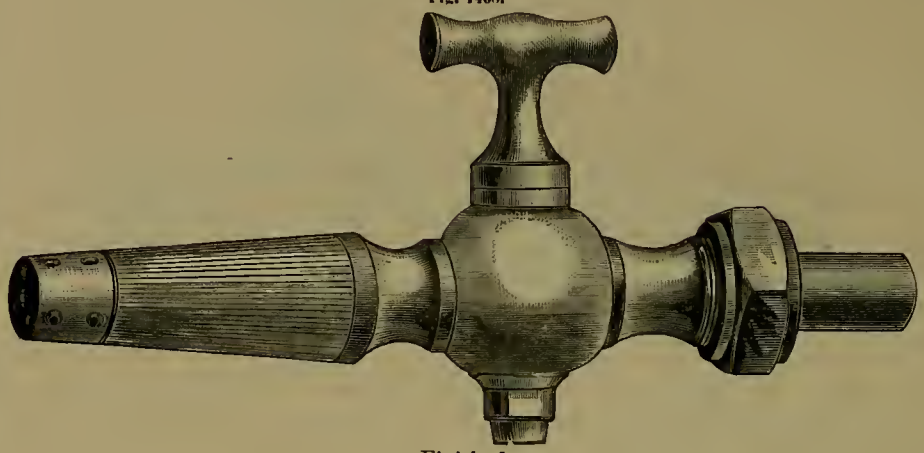
Fig. 1467.

Finished.

Beer Cock.

With Coupling.

Fig. 1468.

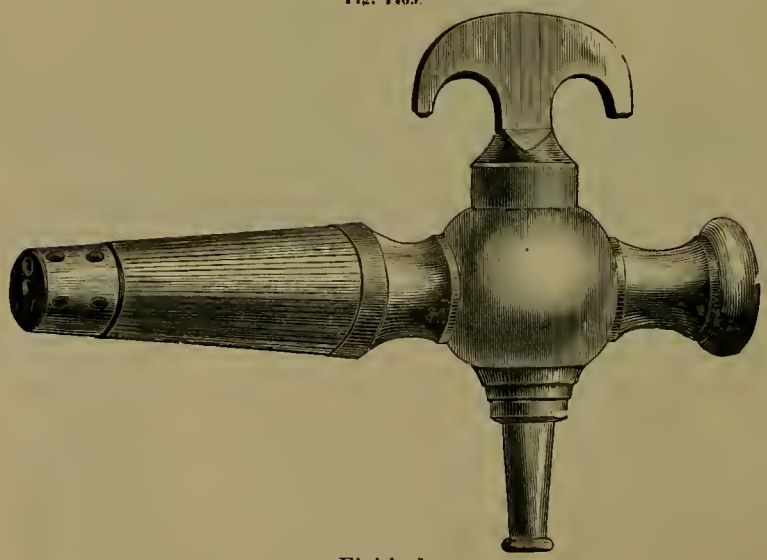


Finished.

Ale Cock

To Drive.

Fig. 1469.

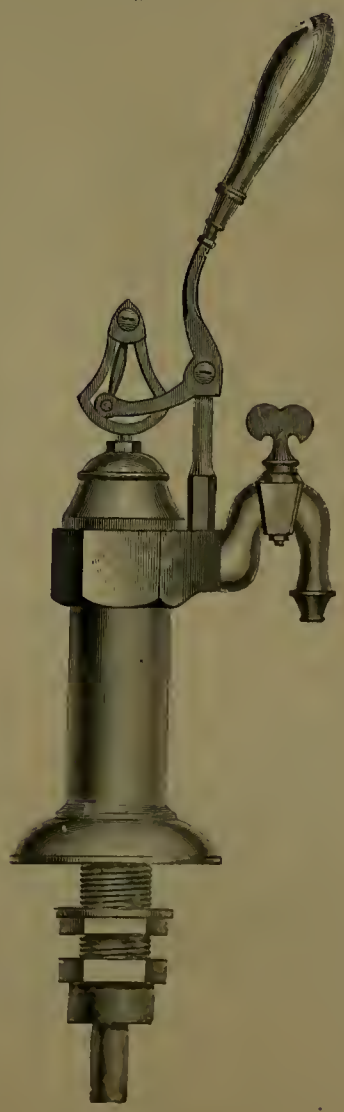


Finished.

Beer Pump.

For Counter.

Fig. 1470.

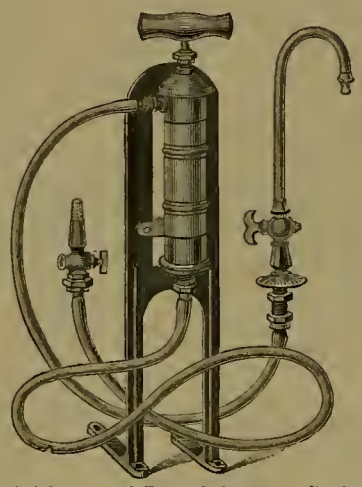


Finished and Plated

Beer Pumps.

Complete, on Iron Stand, with Counter Cock, Beer Cock, and Lead Pipe.

Fig. 1471.



Finished, and Plated Counter Cock.

Beer Pump without Stand.

Fig. 1472.

Beer Pump on Iron Stand.

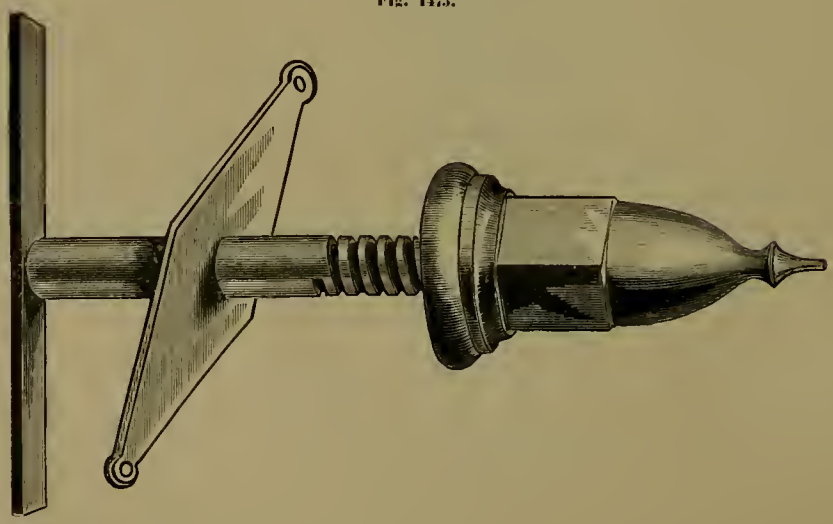
Fig. 1473.

Iron Stand for Beer Pump.

Fig. 1474.

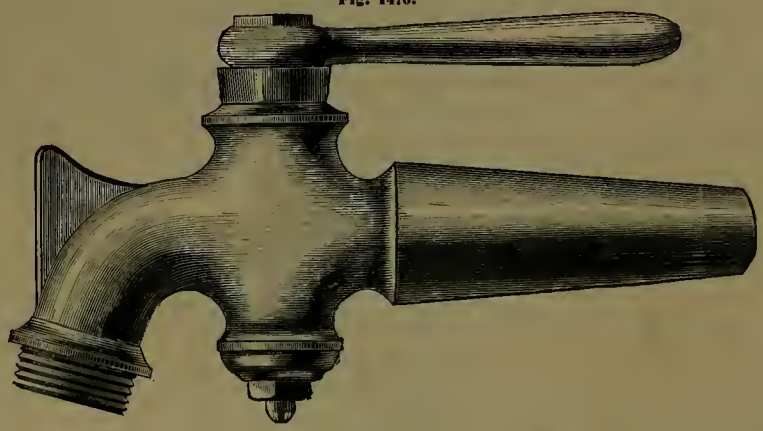
Wine Cask Screw.

Fig. 1475.



Wine Cocks.

Fig. 1476.



Hose End. Size, 1 1¼ 1½ 2 Inch Hose.

Bent, for Cask.

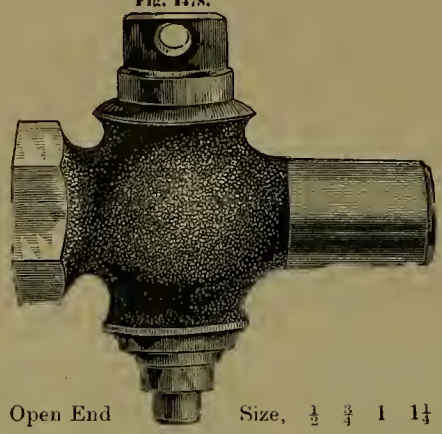
Fig. 1477

Hose End

Size, 1 1¼ 1½ 2 Inch Hose.

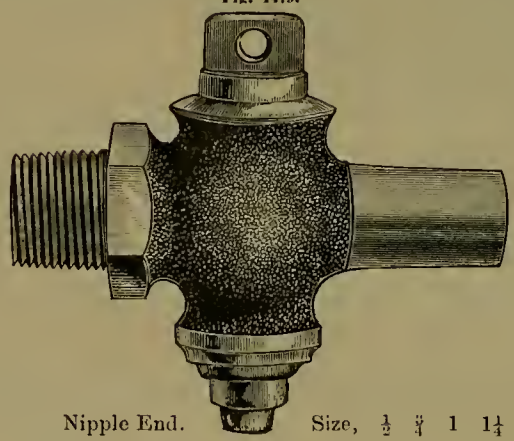
Meter Cocks.

Fig. 1478.



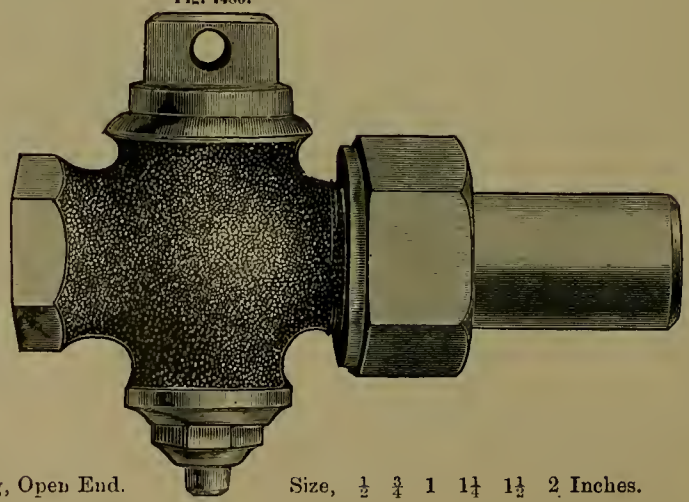
Open End Size, ½ ¾ 1 1¼ 1½ 2 Inches.

Fig. 1479.



Nipple End. Size, ½ ¾ 1 1¼ 1½ 2 Inches.

Fig. 1480.

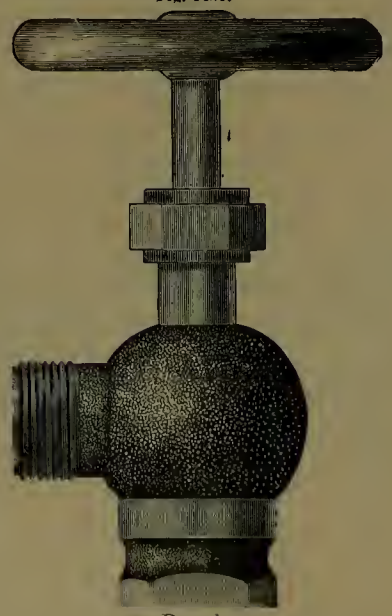


With Union Coupling, Open End. Size, ½ ¾ 1 1¼ 1½ 2 Inches.

Garden Angle Valves.

Straight Nose, Hose.

Fig. 1481.



Rough.

Bent Nose, Hose.

Fig. 1482.

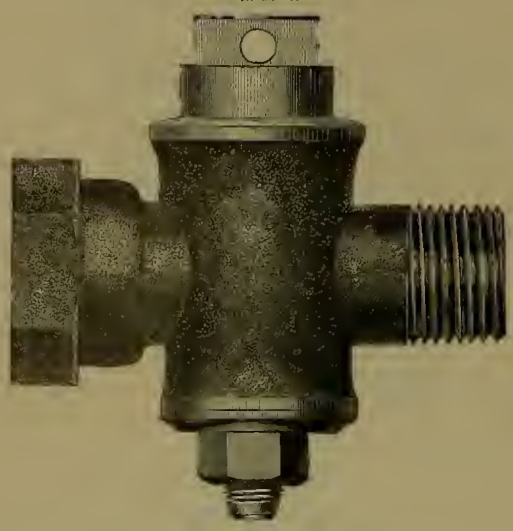
Rough.

Hose End, size,	½	¾	1	1¼	1½	2	2½ Inches.
Pipe End, size,	½	¾	1	1¼	1½	2	2½ Inches.

Chabot Cocks.

Round Water Way, for Connecting with Street Mains.

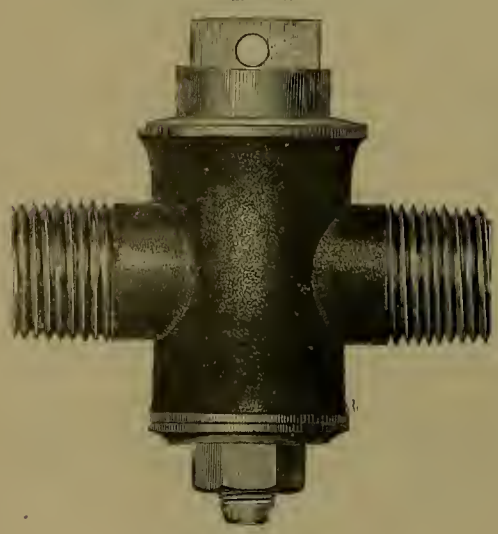
Fig. 1483.



Inside and Outside Threads.

Size, ½ ¾ 1 1¼ 1½ 2 Inches.

Fig. 1484.



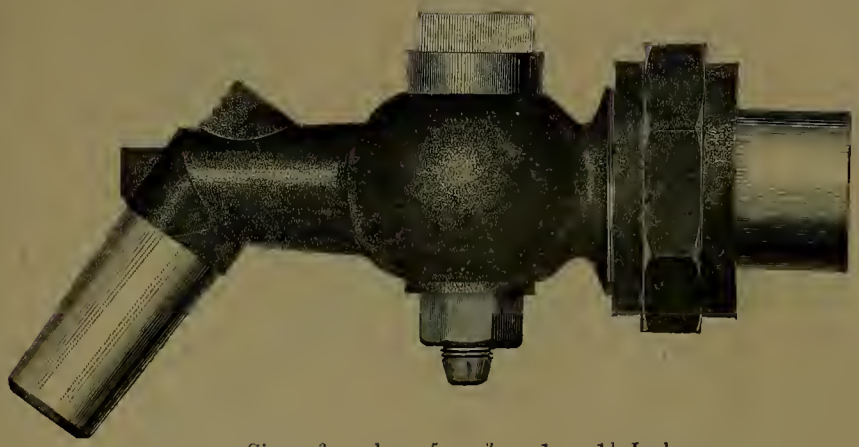
Outside Threads.

Size, ½ ¾ 1 1¼ 1½ 2 Inches.

Corporation Stops.

For Lead and Iron Pipe.

Fig. 1485.



Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ Inches.

Coupling Cocks.

For Lead and Iron Pipe.

Fig. 1486.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ Inches.

Union Couplings.

For Lead and Iron Pipe.

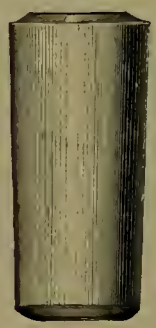
Fig. 1487.

Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Brass Plugs.

For Mains.

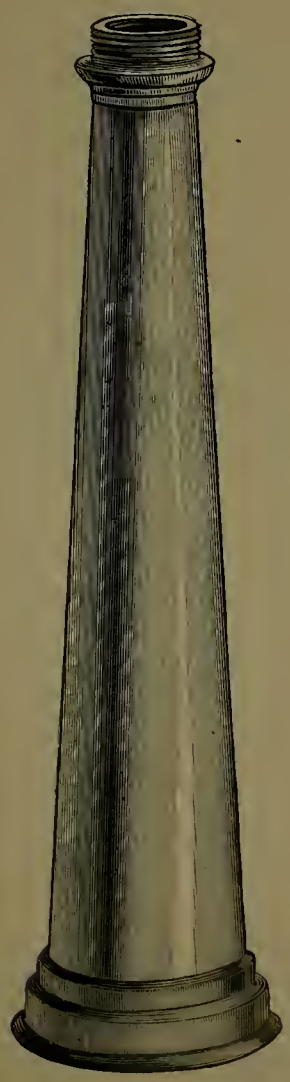
Fig. 1488.



Size, $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ Inches.

Hydraulic Copper Pipe.

Fig. 1489.



Female Hose End.

Size, 4 5 6 7 8 Inch Hose.

Hydraulic Hose Coupling.

Fig. 1490.

Size, 4 5 6 7 8 Inches.

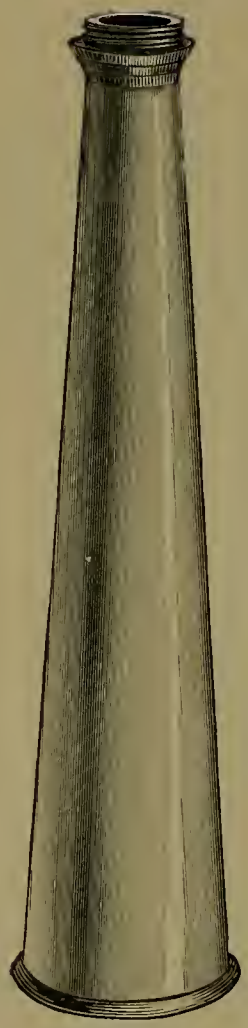
Male Hose Coupling.

Fig. 1491.

Size, 4 5 6 7 8 Inches.

Hydraulic Copper Pipe.

Fig. 1492.



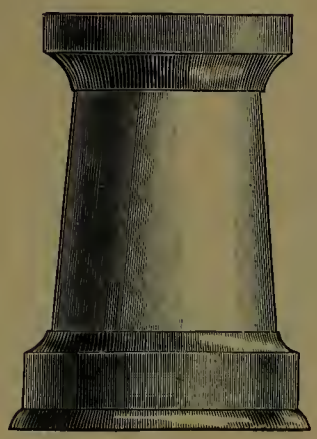
Plain End.

Size, 4 5 6 7 8 Inches Diameter.

Nozzles and Butt for Hydraulic Pipes.

Fig. 1493.

Outlet.



Nozzle.

2 in. Butt x $\frac{3}{4}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$.
$2\frac{1}{2}$ in. Butt x 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{8}$, $2\frac{1}{4}$.
3 in. Butt x 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{4}$, $2\frac{1}{2}$, $2\frac{3}{4}$.
$3\frac{1}{2}$ in. Butt x 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{4}$, $2\frac{1}{2}$, $2\frac{3}{4}$, 3, $3\frac{1}{4}$.
4 in. Butt x 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{4}$, $2\frac{1}{2}$, $2\frac{3}{4}$, 3, $3\frac{1}{4}$, $3\frac{1}{2}$, $3\frac{3}{4}$.

Cap Nozzle, with Adjustable Steel Rings.

Fig. 1494.

Made to suit any size Butt, with Rings to reduce to any size desired.

Cap screws off to place Rings for any size of Outlet.

Butt.

Fig. 1495.

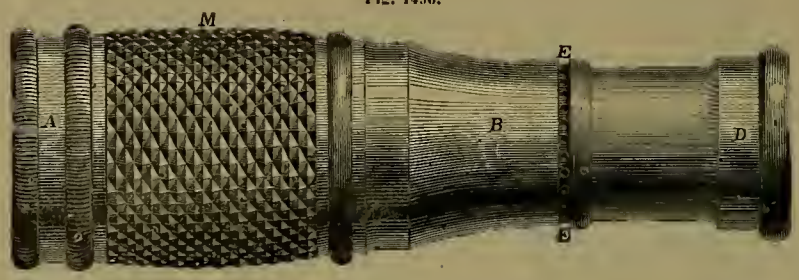
Size, 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 Inches.

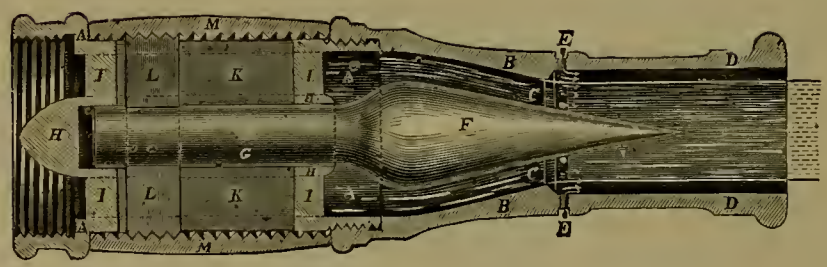
Parties ordering will send size of the Opening of the Butt and the size of the Nozzle at the Outlet—for instance, send me a $1\frac{1}{2}$ inch Nozzle to fit a $2\frac{1}{2}$ inch Butt. If this is strictly adhered to there will be no trouble, for all the Nozzles will fit their respective Butts.

CLEMENS'

PATENT CONTROLLING NOZZLE.

Fig. 1496.



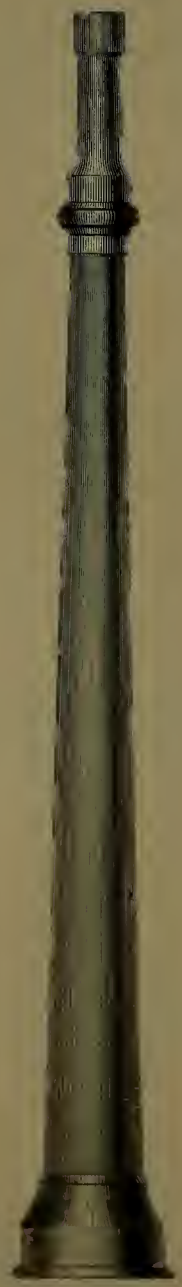


Inside View.

For Fire Department, Mill and Factory use.

Hose Pipe for Fire Engine.

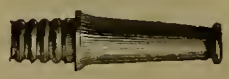
Fig. 1497.



Size, 2½ Inches.

Hose Nozzle.

Fig. 1498.



To tie on.

Size, $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ Inches.

Hose Pipes.

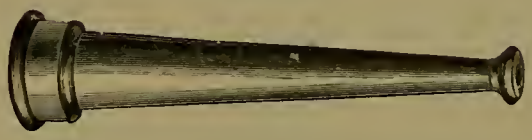
Short, Plain, Screw Tip, Cast.

Fig. 1499.

Size, $\frac{3}{4}$ 1 Inch.

Plain, Cast.

Fig. 1500.



Size, 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ Inches.

Long, Plain, Screw Tip.

Fig. 1501.

Size, $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Long, Plain, Soldered Tip.

Fig. 1502.

Size, 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Hose Pipes.

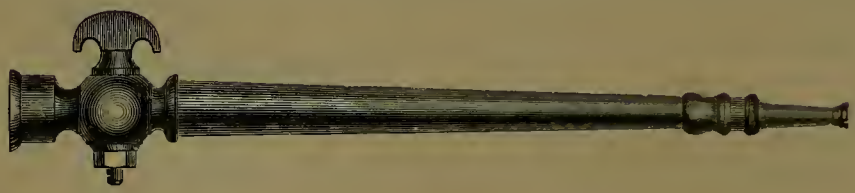
Short, Cock Large End, Screw Tip, Cast.

Fig. 1503.

Size, $\frac{3}{4}$ 1 Inch.

Long, Cock Large End, Screw Tip.

Fig. 1504.



Size, $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Paragon Hose Pipe.

Fig. 1505.

Size, $\frac{3}{4}$ 1 Inch.

Hose Sprinklers.

Small.

Fig. 1506

For $\frac{3}{4}$ and 1 Inch Hose Pipe.

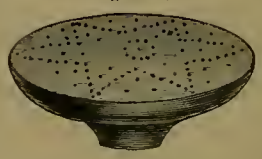
Large.

Fig. 1507.

For $1\frac{1}{4}$ Inch Hose Pipe.

Extra Large.

Fig. 1508.

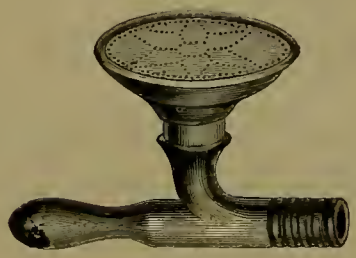


For $\frac{3}{4}$ Inch Hose Pipe.

Shampooing Sprinklers.

With Handle.

Fig. 1509.



Finished and Plated.

Filter.

Fig. 1510.

Finished and Plated.

Hose Bibb End.

Fig. 1511.

Size, $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Hose Coupling.

Fig. 1512.

Size, ½ ¾ 1 Inch.

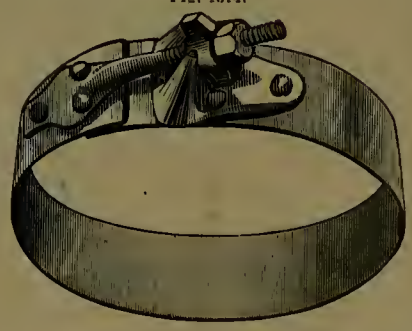
Brass Hose Bands.

Fig. 1513.

Size, ½ ¾ 1 1¼ 1½ 2 2½ 3 Inches.

Iron Hose Band.

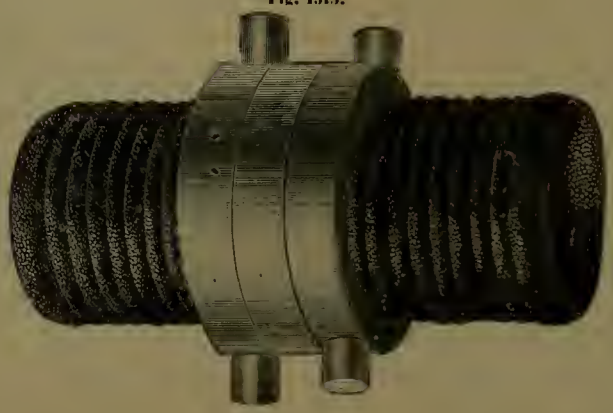
Fig. 1514.



Size, 3 3½ 4 4½ 5 6 7 8 Inches.

Suction Hose Coupling.

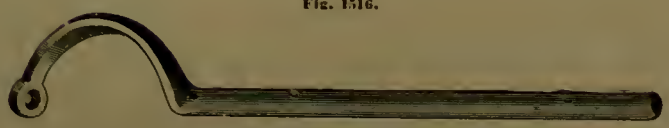
Fig. 1515.



Size, 1¼ 1½ 2 2½ 3 3½ 4 4½ 5 6 7 8 Inches.

Hose Spanner.

Fig. 1516.

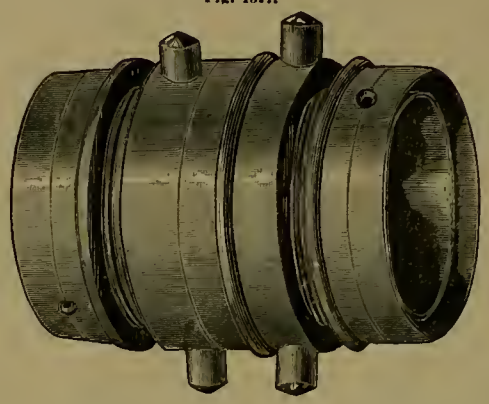


For 1¼ 1½ 2 2½ 3 Inch Hose Coupling

Hose Coupling.

For Leather Hose, with Bands.

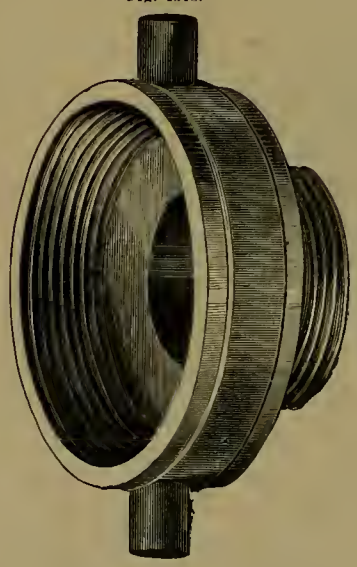
Fig. 1517.



Size, 2 2½ 3 4 Inches.

Hose Reducer.

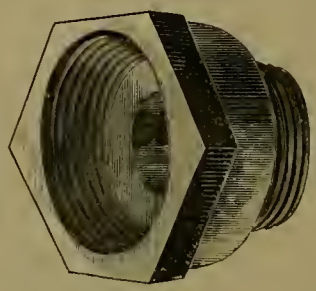
Fig. 1518.



Size ..... 2½ inch x 2, 1½, 1¼, 1 or ¾ inch.
" ..... 2 inch x 1½, 1¼, 1 or ¾ inch.
" ..... 1½ inch x 1¼, 1, ¾ or ½ inch.
" ..... 1¼ inch x 1, ¾ or ½ inch.

Hose and Pipe Connections.

Fig. 1519.



Size ..... 1½ inch x 1¼, 1, ¾ or ½ inch.
" ..... 1¼ inch x 1, ¾ or ½ inch.
" ..... 1 inch x ¾ or ½ inch.

Hose Nipple

Fig. 1520.

Size, ¾ 1 1¼ 1½ 2 2½ 3 3½ 4 inches.

Rubber Hose.

Eastern Rubber Company, the Best in Market.

Fig. 1521.

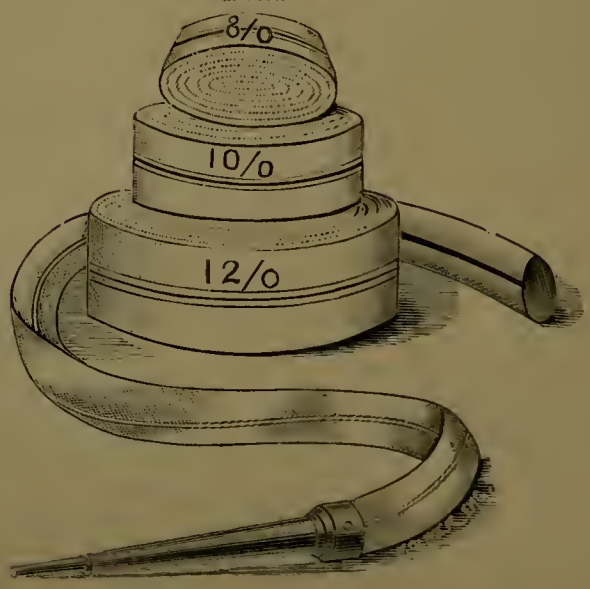
Two, Three, Four and Five Ply.

Size,	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	Inches.
Suction Hose,			1	1¼	1½	2	2½	3	3½	4	5	6	8 Inches.

Canvas Hose.

For Hydraulic Mining.

Fig. 1522.



Size, 4 5 6 7 8 Inches.

PLAIN COUPLING.

For Lead and Copper Pipe.

Fig. 1523.

Plain and Ground Face.

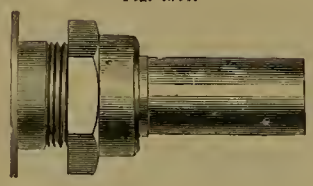
Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 $2\frac{1}{2}$ 3 Inches.

BOILER COUPLINGS.

For Copper Boilers.

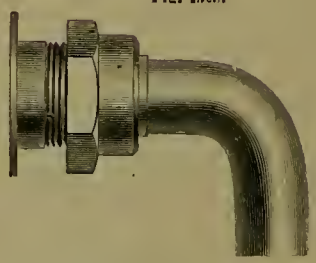
STRAIGHT.

Fig. 1524.



BENT.

Fig. 1525.



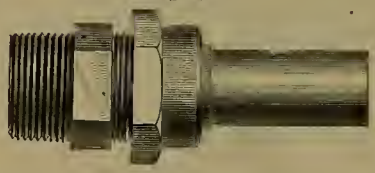
Plain and Ground Face.

Size, $\frac{1}{2}$ $\frac{3}{4}$ 1 Inch.

For Iron Boilers.

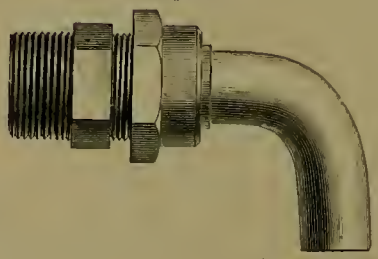
STRAIGHT.

Fig. 1526.



BENT.

Fig. 1527.

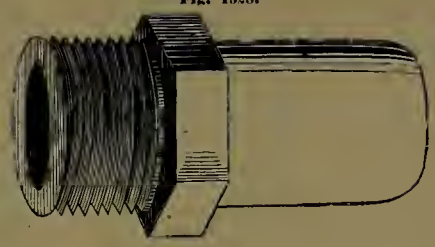


Plain and Ground Face.

Size, $\frac{1}{2}$ $\frac{3}{4}$ 1 Inch.

Soldering Nipple.

Fig. 1528.



Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 Inches.

Deck Screw.

Small.

Fig. 1529.

Size, 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Sink or Bath Plug.

Fig. 1530.

Size, $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{4}$ 3 Inches.

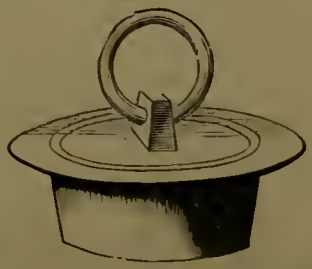
Wash Tray Plug.

Fig. 1531.

Size, 1 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 $2\frac{1}{2}$ Inches.

Brewers' Tank Plug.

Fig. 1532.



Size, 4 5 6 7 8 Inches.

Basin Plugs.

Patent Overflow.

Fig. 1533.

Finished and Plated.

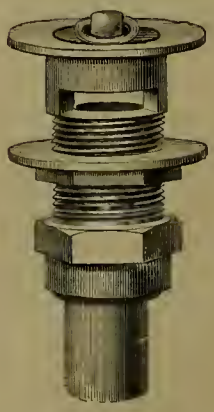
Fig. 1534.

Finished and Plated.

Sink Plug.

For Earthen Sink.

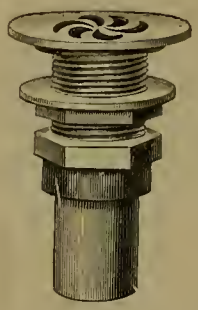
Fig. 1536.



Finished and Plated.

Basin Grate.

Fig. 1535.



Finished and Plated.

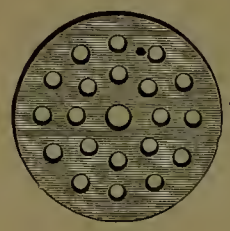
STRAINERS.

Fig. 1537.

Fancy. No. 1.

Convex. No. 2.

Round. No. 3.

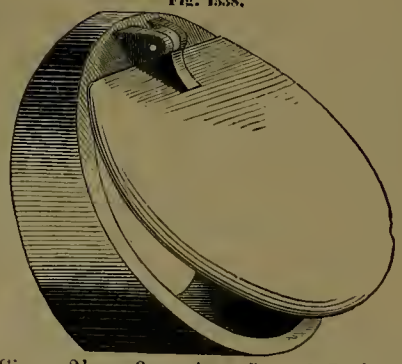


Size, $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 5 6 Inches.

SEWER VALVE.

Brass.

Fig. 1538.



Size, $2\frac{1}{2}$ 3 4 5 6 Inches.

VACUUM VALVES.

For Copper Boiler.

Fig. 1539.

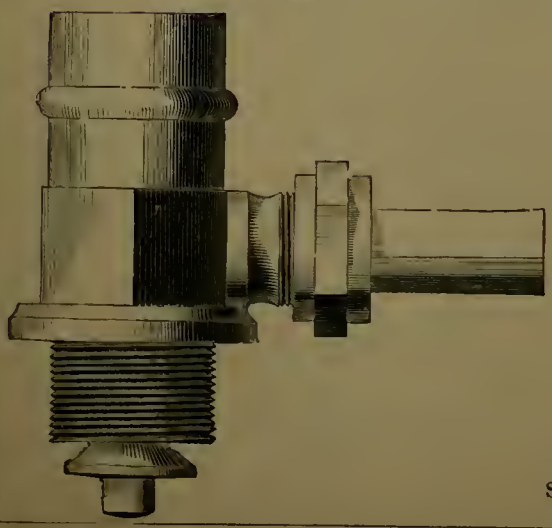


Fig. 1540.

Size, $\frac{3}{4}$ Inch.

Brass and Plated Chain.

Fig. 1541.

Wire Gauze.

No. 22.

No. 20.

No. 18.

No. 17.

No. 16.

No. 15.

No. 14.

No. 12.

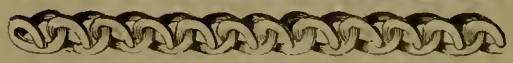
No. 10.

Double.

No. 18.

No. 17.

No. 15.

No.  14.

No. 12.

Safety.

No. 00.

No. 0.

No. 1.

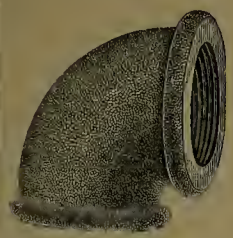
No. 2.

No. 3.

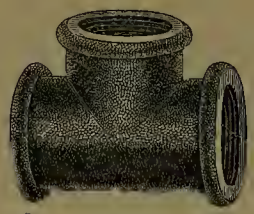
BRASS FITTINGS.

FOR IRON OR BRASS PIPE.

Elbow.
Fig. 1542.



Tee.
Fig. 1543.



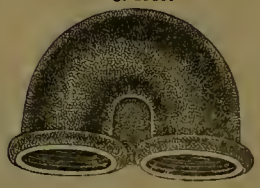
Cross.
Fig. 1544.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Open.
Fig. 1545.

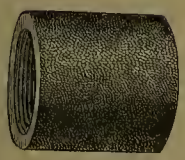
Return Bends.

Close.
Fig. 1546.



Size, $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Coupling.
Fig. 1547.



Close Nipple.
Fig. 1548.

Shoulder Nipple.
Fig. 1549

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Plug.
Fig. 1550.

Cap.
Fig. 1551.

Locknut.
Fig. 1552.

Size, $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Bushing—Hexagon.
Fig. 1553.

Bushing—Round.
Fig. 1554.

Size, $\frac{1}{8}$x$\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$; $\frac{1}{4}$x$\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2; $\frac{3}{8}$x$\frac{1}{2}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2; $\frac{1}{2}$x$\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2; $\frac{3}{4}$x1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2; 1x$1\frac{1}{4}$ $1\frac{1}{2}$ 2; $1\frac{1}{4}$x$1\frac{1}{2}$ 2; $1\frac{1}{2}$x2.

Brass Deck Plates.

Fig. 1555.

Key.

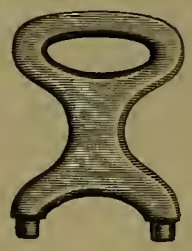
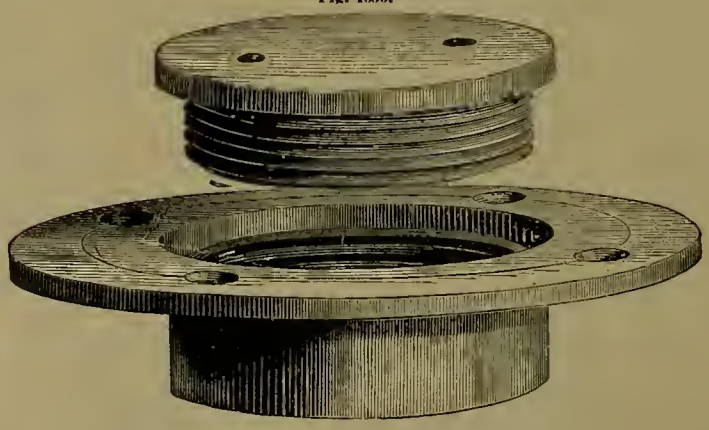


Plate.

Screwed for Iron Pipe.

Size, 1 $1\frac{1}{4}$ $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inch Iron Pipe.

Fig. 1556.

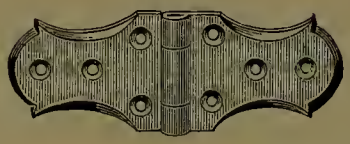


Size of Opening, $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 Inches.

Brass (or Composition) Hinges.

Boston Pattern.

Fig. 1557.



Measured whole length when open.

Size, 3 4 5 Inches, Light. Size, 5 6 Inches, Heavy,

T Hinge.

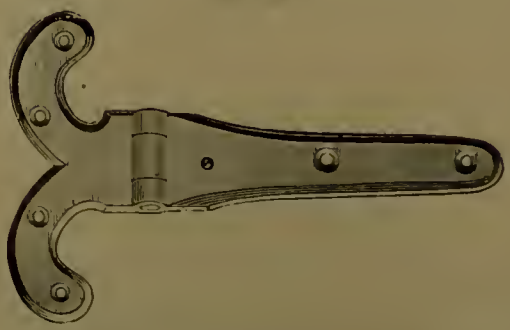
Fig. 1558.

Measured whole length when open.

Size, 5 6 7 8 Inches.

Port Hinge.

Fig. 1559.



Measured whole length when open.

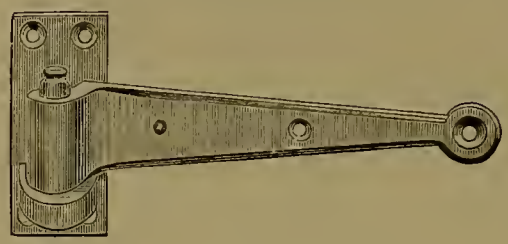
Size, 4 5 6 7 8 10 Inches.

Finished and Rough, and Made any Length.

Brass (or Composition) Hinges.

Hook Hinge.

Fig. 1560.



Measure centre of Pin.

Size, 6 7 8 9 10 Inches

Strap Hinge.

Fig. 1561.

Measured whole length when open.

Size, 5 6 7 8 9 10 11 12 13 14 16 18 Inches.

Finished and Rough, and Made any Length.

Cast Brass Step Plate.

Fig. 1562.

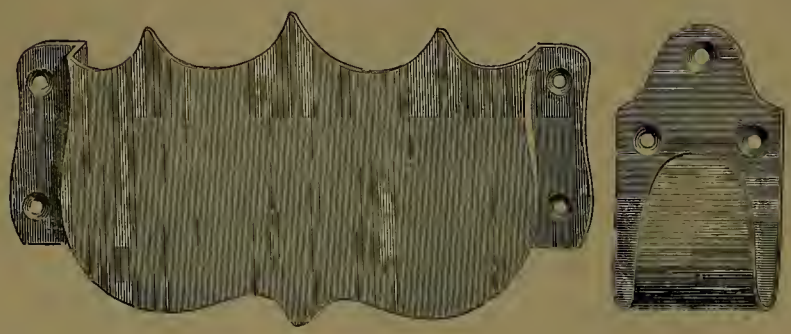
Finished, Dipped or Rough.

Any Widths or Lengths to Order.

Cast Brass Axe Brackets.

Six Inch Pocket.

Fig. 1563.



Brass Skylight Quadrant.

Fig 1561.

No. 1, 9 Inches. No. 2, 12 Inches. No. 3, 13 Inches.

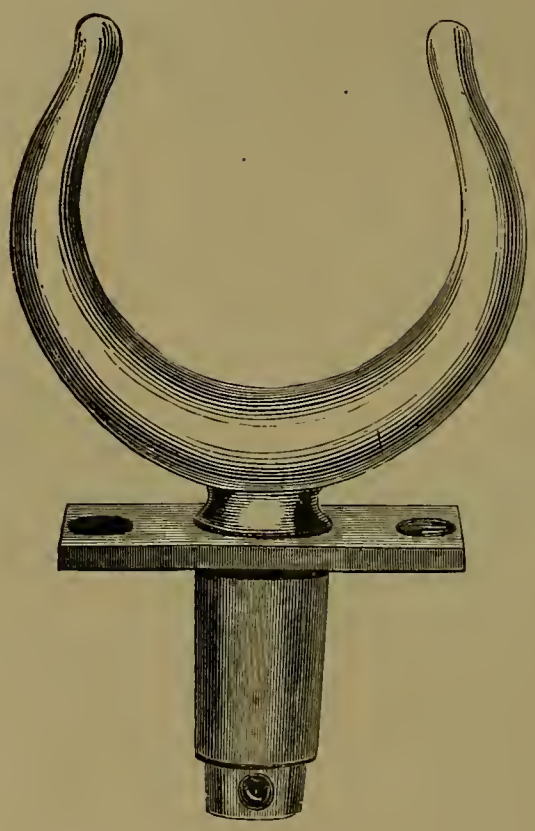
Brass Sheaves.

Fig. 1565.

Brass Rowlock.

Finished.

Fig. 1566.



No. 0. 2 Inch Opening.

" 1. 2 " "

" 2. $2\frac{1}{4}$ " "

" 3. $2\frac{1}{2}$ " "

" 4. 3 " "

Brass Side Lights.

Heavy Pattern.

Fig. 1567.

Size of Opening, 4 5 6 7 8 9 10 Inches.

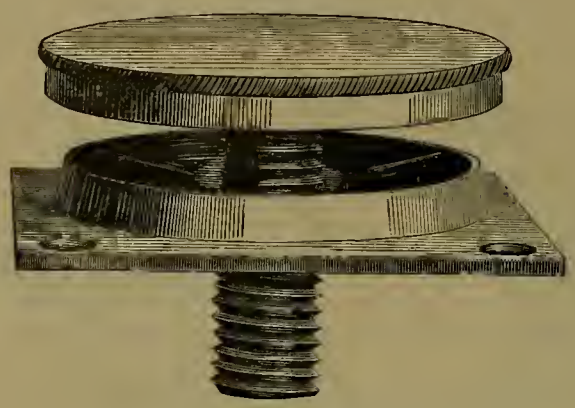
Light Pattern.

Fig. 1568.

Size of Opening, 5 6 Inches.

Brass Ventilator.

Fig. 1569.



Size of Opening, 2 2½ 3 Inches

Brass or Lead Figures.

Fig. 1570.

All Sizes.

Ship Closet Valve.

Fig. 1571.

Size, $3\frac{1}{2}$ $4\frac{1}{2}$ Inches

Ship Closet Pump.

Fig. 1572.

Hydraulic Rams.

Fig. 1573.

The above cut represents a Hydraulic Ram in operation, irrigating higher land than could be reached by the water brought by the ditch.

The Ram appears to be too little known throughout the Pacific Coast, and especially in the districts where many streams are to be found now running to waste, on account of the expenses attending pumping by steam or horse-power, and where the Hydraulic Ram would be of great utility for the purposes of irrigating land now useless, or in watering stock, and many other purposes too numerous to mention.

The useful effect of the Ram, like all water motors, depends much upon its being properly constructed and set up and when so constructed is the most important of all hydraulic apparatuses for forcing a portion of a running stream to any distance or height, proportionate to the fall obtainable. We have several sizes of Rams adapted especially to the wants and uses of the Pacific Slope, and would call the attention of ranchers and stock raisers to the increasing use to which this motor can be applied, and the durability and efficiency of this machine, as given by some of the best authorities in the United States.

A Ram put up and set to work in Durham, Conn., in 1847, which has been in constant use up

to 1874 (the last date at which the writer has heard from it) has not cost five dollars for repairs. The water was delivered 85 feet above the Ram, through 825 feet of half-inch pipe, the drive pipe being of 1¼ inches diameter and 40 feet long.

The Ram at Girard College, examined and reported upon by a Committee of the Franklin Institute, gave a percentage of useful effect equal to .71. The drive pipe was 2½ inches in diameter, 160 feet long; height of fall, 14 feet. The discharge pipe was 1 inch in diameter, 2,260 feet long, and the height of delivery above the spring equal to 93 feet.

With a given supply of water under a *great fall*, the Ram is not required to be of as large a size as for the same quantity of water under a less fall.

If the Ram is to be placed under a greater head or fall than named in the table, it will, of course, be necessary to increase the weight and strength of the drive pipe; also, if the water is to be forced to any greater height than above mentioned, the discharge pipe should be proportionately increased in weight and strength. Where water is to be forced to any great distance (say more than 75 rods) it is preferable to use a discharge pipe of a *larger caliber* than named in the table.

To enable any person to make the calculation as to what fall will be sufficient to apply to the Ram to raise a sufficient supply of water to his premises, we would say that in conveying it an ordinary distance of say 50 or 60 rods, it may be safely calculated that about one-seventh part of the water can be raised and discharged at an elevation above the Ram, five times as high as the fall, which is applied to the Ram, or one-fourteenth part can be raised and discharged, say ten times as high as the fall applied; and so in that proportion as the fall or rise is varied. Thus, if the Ram be placed under a head or fall of 5 feet, of every seven gallons drawn from the spring, one may be raised 25 feet, or half a gallon 50 feet. Or with 10 feet fall applied to the Ram, of every fourteen gallons drawn from the spring one gallon may be raised to the height of 100 feet above the Ram, and so in like proportion as the fall or rise is increased or diminished.

Turns and elbows in either the drive or discharge pipes should be avoided; but there should be from 25 to 50 feet of discharge pipe. Even with a fall of but few feet to secure the quantity and velocity of water to work the Ram properly, where room is limited, a coil of 5 or 6 feet in diameter should be put in, making the bends as easy as possible, as the slightest obstruction in the flow of water materially interferes with the effective working of the Ram.

To find the number of gallons raised per minute, multiply sixty-five times the quantity received by the number of feet in fall and divide by one hundred times the height water is to be elevated.

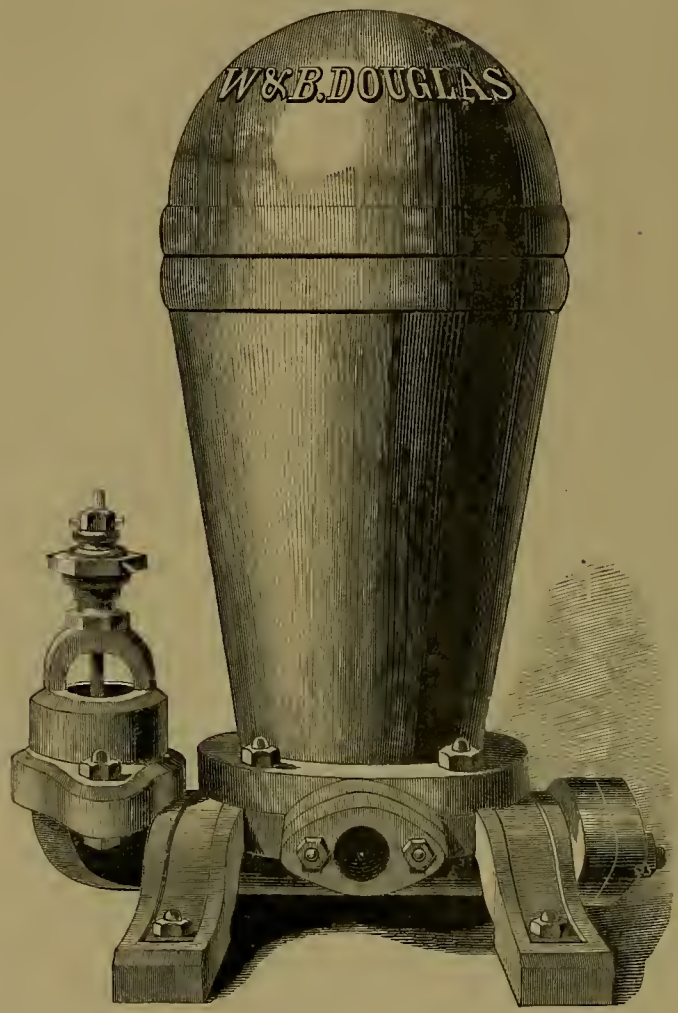
EXAMPLE.

The supply of water being eight gallons per minute, the fall 10 feet, the elevation to which the water is to be raised above the ram 50 feet,

$$8 + 65 = 520 + 10 = 5{,}200.$$

$$100 + 50 = 5{,}000 \div 5{,}200 = 1\tfrac{4}{100} \text{ gallons.}$$

Fig. 1574.



SIZE OF RAM	QUANTITY OF WATER FURNISHED PER MINUTE BY THE SPRING OR BROOK TO WHICH THE RAM IS ADAPTED.	LENGTH OF PIPES.		CALIBER OF PIPES.		WEIGHT OF PIPE (IF OF LEAD), OR IF OF WROUGHT IRON.		WEIGHT OF RAMS
		Drive.	Discharge	Drive.	Discharge.	Drive Pipe for any head or fall not exceeding 10 ft.	Discharge Pipe for not over 50 feet rise.	
	Per Minute.	Feet.	To where desired.	Inches.	Inch.	Per Yard.	Per Rod.	
No. 2	3 qts. to 2 gals.	25 to 50		$\frac{3}{4}$	$\frac{3}{8}$	6 lbs.	8 lbs.	22
No. 3	$1\frac{1}{2}$ gal. to 4 gals.	25 to 50		1	$\frac{1}{2}$	8 lbs.	11 lbs.	29
No. 4	3 gal. to 7 gals	25 to 50		$1\frac{1}{4}$	$\frac{1}{2}$	10 lbs.	11 lbs.	35
No. 5	6 gal. to 14 gals.	25 to 50		2	$\frac{3}{4}$	23 lbs.	20 lbs.	55
No. 6	12 gal. to 25 gals.	25 to 50		$2\frac{1}{2}$	1	40 lbs.	6 lbs. ℔ yd.	125
No. 7	20 gal. to 40 gals.	25 to 50		$2\frac{1}{2}$ $2\frac{3}{4}$	$1\frac{1}{4}$	40 to 45 lbs.	9 lbs. ℔ yd.	200
No. 10	25 gal. to 75 gals.	25 to 50		4	2	16 lbs. ℔ ft.C.I	20 lbs. ℔ yd.	700

There is an adjuster attached to each of the Rams by means of which the quantity of water drawn can be conveniently controlled to suit the varying quantity of springs, as may be affected by drought or rain. All these machines are composed of brass and iron, making them very durable and compact.

Where the stream is a large one, several rams may be set so as to play into one discharge pipe, each Ram having a separate drive pipe from stream to Ram.

The following Table, calculated by means of Daubusson's Formula, shows the Efficiency or Percentage of Duty due to proportion of height of discharge to fall, varying from 4 to 26:

HEIGHT OF DISCHARGE WHEN THE FALL= 1	EFFICIENCY= c	HEIGHT OF DISCHARGE WHEN THE FALL= 1	EFFICIENCY= c	HEIGHT OF DISCHARGE WHEN THE FALL= 1	EFFICIENCY= c
Ratio.	Per cent.	Ratio.	Per cent.	Ratio.	Per cent.
4	86	12	45	20	17
5	79	13	41	21	14
6	73	14	37	22	11
7	68	15	34	23	8
8	63	16	30	24	5
9	58	17	27	25	2
10	53	18	23	26	0
11	49	19	20	...	...

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ABREVIATIONS.

L. P. . . . . Lead Pipe.
S. O. T. . . . Screwed for Iron Pipe without Shoulder.
S. S. S. . . . Screwed for Iron Pipe with Shoulder.
S. I. P. . . . Screwed for Iron Pipe.
F. & T. . . . . Flanged and Thimble.
T. H . . . . . T Handle.
B. C. . . . . Bent Coupling.
T. W. S. K. . Tube Waste, Stop on Key.
S. W. . . . . Screwed for Wood.
L. S. . . . . Long Shank.
W. F. & T. . . . . With Flange and Thimble.
T. H. . . . . Tee Handle.
L. H . . . . . Lever Handle.
R. W. . . . . Round Way.
L. & I. P. . . . . Lead and Iron Pipe.

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